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ABSTRACT

This monograph considers four major socioeconomic indicators: mobility, education, employment, and income. The first chapter of this report summarizes these indicators for the State and provides data which indicate trends in these variables. Each is then separately considered in a chapter where data are provided at the planning district level. Individual chapters are devoted to mobility, education, employment and labor force, occupation, and income. These are followed by chapters analyzing white-nonwhite and urban-rural differentials. The final chapter explores the interrelationships between mobility, education, employment, and income and the impact which changes in some of these variables might have on the others. The two measures of mobility which are used in this analysis are place of birth and place of residence in 1965. The effects on mobility of the high concentration of military personnel and the presence of colleges and universities in certain areas of the state are considered. Data are provided on the educational achievement of Virginia's population. Data on the labor force include the occupational composition of workers, the industrial composition of the labor force, and the rate of labor force participation of various age-race-sex groups of the population. (Author/JM)

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VIRGINIA'S POPULATION: A DECADE OF CHANGE

Socioeconomic Characteristics

William J. Serow and Michael A. Spar

January 1974

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Third in a Series Analyzing the 1970 Census

UD 014 302

Introduction

This monograph is the third volume in the Tayloe Murphy Institute's series of analyses based on the results of the 1970 Census of Population and Housing. The first report analyzes the demographic characteristics of the State; the second presents estimates of net migration by age and race during the 1960-1970 decade for Virginia Planning Districts and SMSAs. As in the second volume, the principal unit of analysis is the planning district. This study considers four major socioeconomic indicators: mobility, education, employment, and income.

The first chapter of this report summarizes these indicators for the State and provides data, which indicate trends in these variables. Each is then separately considered in a chapter where data are provided at the planning district level. Individual chapters are devoted to mobility, education, employment and labor force, occupation and income. These are followed by chapters analyzing white-nonwhite and urban-rural differentials. The final chapter explores the interrelationships between mobility, education, employment, and income and the impact which changes in some of these variables might have on the others.

The two measures of mobility which are used in this analysis are place of birth and place of residence in 1965. The effects on mobility data of the high concentration of military personnel and the presence of colleges and universities in certain areas of the state are considered.

Data are provided on the educational achievement of Virginia's population. Of primary importance is the number of school years completed. This data is causally related to the occupational distribution of the population and, by inference, to the income level of the population.

Data on the labor force include the occupational composition of workers (that is, the type of work that people do), the industrial composition of the labor force (that is, the principal production service of the employer), and the rate of labor force participation of various age-race-sex groups of the population.

The income analysis in this report primarily concerns the poverty status and distribution of household income of Virginia residents as of 1969.* These data should not be confused with the income estimate series of the Tayloe Murphy Institute. The data for the latter is estimated on the basis of statistics on unemployment insurance, employment, social insurance, income tax, etc., provided by the U.S. Department of Commerce, Bureau of Economic Analysis.**

These variables, notably education, can be directly influenced by policy decisions. Thus, analysis of this nature may be useful in the evaluation of alternative policy proposals. It is for this purpose that this study has been undertaken.

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*The Census, taken in 1970, asked for the level of income "last year."

**See Income Estimates: Virginia... 1968 (Charlottesville: Graduate School of Business Administration, Bureau of Population and Economic Research, University of Virginia, 1971) and Income In Virginia...1959 and 1965 to 1969 (Charlottesville: Graduate School of Business Administration, Bureau of Population and Economic Research, University of Virginia, 1972).

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Chapter I.

Socioeconomic Change in Virginia, 1950-1970

Between 1950 and 1970 there were significant changes in the socioeconomic status of Virginia residents. This chapter reviews trends for the State in the areas of educational achievement, employment, income, and labor force composition.

A. Educational Achievement

The median number of school years completed rose 3.2 years between 1950 and 1970.* In 1950 median years of school completed was 8.5, slightly more than a grade school education. The median increased steadily, and by 1970 it was 11.7 years, almost a complete high school education. (See Table 1.)

Between 1950 and 1970 there was a significant decline in the number of persons having only an eighth grade education. In each decade the share of the population with no more than an eighth grade education declined about 10%, but in absolute numbers the greatest decline (15.6%) occurred between 1960 and 1970.

The number of persons in Virginia who received no more than a high school diploma increased by 135% between 1950 and 1970. The greatest increase (65%) occurred between 1950 and 1960. In 1960 20.7% of the population had earned just a high school diploma, and by 1970 25.2% had done so.

The most spectacular increase occurred among those who completed at least four years of college. Only 6.5% of the population in 1950 had earned at least a college degree compared to 8.4% in 1960 and 12.3% in 1970. In absolute numbers, the number of persons who earned at least an undergraduate degree increased by 166.2% between 1950 and 1970.

B. Labor Force.

The socioeconomic changes which occurred in Virginia between 1950 and 1970 are reflected in the changing composition of Virginia's labor force. These changes may be viewed in three ways: the demographic composition of the labor force, the occupational composition, and the industrial composition.

1. Demographic Composition. In 1950 there were 1,305,611 persons in Virginia's labor force. The number increased to 1,532,599 by 1960. A greater increase occurred by 1970, bringing the total Virginia labor force to 1,956,894, an increase of 49.9% over 1950.

The portion of the population in the military increased slightly between 1950 and 1970. Of the 1950 population aged 14 and over 4.5% (108,935 persons) was in the military, compared to 4.8% (133,082) of the 1960 population and 5.1% (175,718) of the 1970 population. Similarly, the civilian labor force increased from 49.8% (1,196,676 persons) in 1950 to 50.8% (1,399,517) in 1960 and 52.1% (1,781,176) in 1970. In 1950 the civilian labor force was 72.7% male and 27.3% female, but by 1960 the female share increased to 33.7% and by 1970 to 39.4%.

The civilian labor force participation rate (that is, the number of persons in the civilian labor force, divided by the total population aged 14 and over) increased gradually from 49.8% in 1950 to 50.8% in 1960 and 52.1% in 1970.

In 1950 the overall rate of participation was higher for nonwhites (53.9%) than whites (48.6%).** The nonwhite male rate (74.0%) was higher than the white male rate (71.3%); the nonwhite female rate (33.8%) was higher than the white female rate (25.6%). Though the 1960 nonwhite labor force participation rate was still higher than the white rate, the white male rate (68.5%) surpassed the nonwhite male rate (66.9%) while the white female rate (32.6%) lagged behind the non-

*The median is that point in the exact middle of the distribution.

**These data may be somewhat misleading due to the absence of standardization, that is, taking into account the differences in the age composition of these groups.

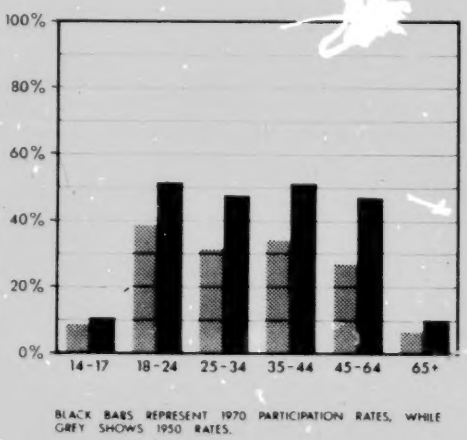
TABLE I. NUMBER OF SCHOOL YEARS COMPLETED, PERSONS AGED 25 AND OVER, VIRGINIA: 1950, 1960, AND 1970

Years of School Completed	1950		1960		1970		Percent Change		
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	1950-60	1960-70	1950-70
0	59,265	3.4	55,356	2.7	39,708	1.6	-6.6	-28.3	-33.0
1-4	256,105	14.7	218,164	10.5	147,707	6.0	-14.8	-32.3	-42.3
5-6	257,715	14.8	254,124	12.2	203,066	8.3	-1.4	-20.1	-21.2
7	231,070	13.2	228,146	11.0	212,938	8.7	-1.3	-6.7	-7.9
8	152,770	8.8	178,316	8.6	184,978	7.6	16.7	3.7	21.0
Total Grade School	897,660	51.5	878,750	42.3	748,689	30.6	-2.4	-15.6	-17.6
9-11	281,225	16.1	358,614	17.2	488,962	20.0	27.5	36.4	73.9
12	261,855	15.0	432,107	20.7	616,942	25.2	65.0	42.8	135.6
Total High School	543,080	31.1	790,721	37.9	1,105,904	45.2	45.6	39.9	103.6
13-15	132,855	7.6	183,428	8.8	250,838	10.3	38.1	36.8	88.8
16+	113,070	6.5	174,904	8.4	300,943	12.3	54.7	72.1	166.2
Total Post-Secondary	245,925	14.1	358,332	17.2	551,781	22.6	45.7	54.0	124.4
Total	1,745,930	100.0	2,083,159	100.0	2,446,082	100.0	16.5	18.2	37.7
Medians	8.5		9.9		11.7				

white female rate (39.0%). By 1970 the overall white rate (52.2%) was higher than the nonwhite rate (51.6%). The difference in the male rates had widened; the white male rate was 65.5%, and the nonwhite male rate was 58.0%. The difference between the female rates had narrowed; the white female rate was 39.4%, and the nonwhite female rate was 40.3%.

Though the male labor force participation rate was consistently higher than the female rate between 1950 and 1970, there was a significant decrease in the span between the two. The rate for males was much higher than the rate for females in 1950 (71.8% for males and 27.4% for females), but by 1960 the male rate had declined slightly to 68.2% while the rate for females had risen considerably to 33.9%. By 1970 the male rate of participation had dropped to 63.7% while the female rate had risen to 40.1%.

Figure 1. Female Labor Force Participation Rates, by Age: 1950 and 1960



BLACK BARS REPRESENT 1970 PARTICIPATION RATES, WHILE GREY SHOWS 1950 RATES.

The decrease in participation among males could be the result of the increasing incidence of Armed Forces service (8.6% of male Virginians in the entire labor force were military in 1950, compared with 13.7% in 1970) and increasing attendance at post-secondary educational institutions (13.8% of all Virginians aged 18-24 were enrolled in school in 1950 compared with 26.2% in 1970).*

Labor force participation among females was higher at all ages in 1970 than 1950, particularly for women over age 25 and most especially for women between the ages of 45 and 64 (see Figure 1). This suggests that married

*Another factor might well be the consistently increasing incidence of retirement at age 65 and even at younger ages. Seymour Wolfbein's Working American Society (Glenview, Ill.: Scott, Foresman and Company, 1971) shows that the retirement rate for men aged 65 had nearly tripled between 1950 and 1960; ..."The evidence for the 1960's indicates that this had continued to be the case in more recent years with growing indications, however, that more and more men are beginning to retire at even earlier ages than 65..." (p. 170).

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF VIRGINIA'S LABOR FORCE: 1950, 1960, AND 1970

Year	Total Number	Total Percent	White Male Number	White Male Percent	White Female Number	White Female Percent	Nonwhite Male Number	Nonwhite Male Percent	Nonwhite Female Number	Nonwhite Female Percent
1950										
Total Population 14+	2,404,426	100.0	954,534	39.7	937,160	40.0	256,265	10.7	256,467	10.7
Number in Labor Force	1,305,611	100.0	777,349	59.5	244,168	18.7	106,945	15.1	87,149	6.7
Labor Force Participation Rate		49.8		71.3		25.6		74.0		33.8
Number in Military	108,935	100.0	97,195	89.2	4,063	3.7	7,436	6.8	241	0.2
Civilian Labor Force	1,196,676	100.0	680,154	56.8	240,105	20.1	189,509	15.8	86,908	7.3
Employed Civilian	1,150,164	100.0	659,781	57.4	232,752	20.2	177,481	10.2	80,150	7.0
Unemployment Rate		3.9		3.0		3.1		6.3		7.8
1960										
Total Population 14+	2,753,069	100.0	1,098,198	39.9	1,121,750	40.8	262,322	9.5	270,799	9.8
Number in Labor Force	1,532,599	100.0	874,224	57.0	367,985	24.0	184,641	12.1	105,749	6.9
Labor Force Participation Rate		50.8		68.5		32.6		66.9		39.0
Number in Military	133,082	100.0	121,635	91.4	2,124	2.0	9,169	8.1	154	0.1
Civilian Labor Force	1,399,517	100.0	752,589	53.8	365,861	26.1	175,472	12.5	105,595	7.5
Employed Civilian	1,340,800	100.0	726,226	54.2	353,516	26.4	163,324	12.2	97,734	7.3
Unemployment Rate		4.2		3.5		3.4		6.9		7.4
1970										
Total Population 14+	3,418,599	100.0	1,379,460	40.4	1,431,984	41.9	291,658	8.5	315,497	9.2
Number in Labor Force	1,956,894	100.0	1,058,161	54.1	567,235	29.0	193,815	10.0	137,683	7.0
Labor Force Participation Rate		52.1		65.5		39.4		58.0		40.3
Number in Military	175,718	100.0	154,256	87.8	3,298	1.9	17,727	10.1	437	0.2
Civilian Labor Force	1,781,176	100.0	903,905	50.8	563,937	31.7	176,088	9.9	137,246	7.7
Employed Civilian	1,727,111	100.0	885,555	51.3	545,247	31.6	169,009	9.8	127,300	7.4
Unemployment Rate		3.0		2.0		3.3		4.0		7.2

	1950 Number	1950 Percent	1960 Number	1960 Percent	1970 Number	1970 Percent	% Change 1950-1970
Total Population 14+	2,404,426	100.0	2,753,069	100.0	3,418,599	100.0	42.2
Number in Labor Force	1,305,611	54.3	1,532,599	55.7	1,956,894	57.2	49.9
Number in Military	108,935	4.5	133,082	4.8	175,718	5.1	61.3
Civilian Labor Force	1,196,676	49.8	1,399,517	50.8	1,781,176	52.1	48.8
Employed Civilian	1,150,164	47.8	1,340,800	48.7	1,727,111	50.5	50.2

women tended to return to the labor force at a much greater rate in 1970 than 1950. (See Table 2.)

The civilian unemployment rate rose from 3.9% in 1950 to 4.2% in 1960 but dropped to 3% by 1970. Between 1950 and 1970 the male unemployment rate was consistently lower than the female rate (3.7% and 4.3% respectively in 1950, 4.1% and 4.3% in 1960, and 2.4% and 4.1% in 1970), and the white rate remained markedly lower than the nonwhite rate (3.0% and 6.8% in 1950, 3.5% and 7.1% in 1960, and 2.5% and 5.4% in 1970). However, the urban rate (4.7%), which was notably higher than the rural rate (2.7%) in 1950, decreased by 1960 while the rural rate increased. In 1960 the unemployment rate in urban areas was 3.8%, and in rural areas it was 4.8%. Both urban and rural rates decreased by 1970, though the urban rate (2.9%) was still lower than the rural rate (3.3%).

2. Occupational Composition. The most remarkable change in the occupational composition of Virginia's labor force between 1950 and 1970 was the widespread shift from agriculture to other areas of the economy. In 1950 14.3% of the state labor force (164,673 persons) was in agriculture (farmers, farm managers, farm foreman, and farm laborers). By 1960 only 7.2% (96,000) was employed in agriculture. In 1970 agricultural employment accounted for a mere 2.5% of Virginia's labor force. Only 33,297 persons were employed in agriculture.

The greatest increase in employment between 1950 and 1970 was in the white collar segment of the labor force. In 1950 33.5% of employment (385,065 persons) was in white collar occupations (professional, managerial, clerical, sales). By 1960 these workers accounted for 40.1% of the labor force (537,978 persons), an increase over 1950 of 39.7%. White collar occupations continued to increase in number, and in 1970 806,837 persons (46.7% of the entire labor force) were white collar workers. The rate of increase over the twenty-year period for all white collar occupations was 109.5%: among professionals, it was 177.4%; among managers, 58.1%; among sales personnel, 49.3%; and among clerical employees, 129.4%. Growth in the latter area was concomitant with the pronounced upsurge in labor force participation by women.

There was a significant increase in the number of blue collar workers in Virginia's labor force between 1950 and 1970, although the share of employment in this sector decreased because of the relatively greater increase in white collar employment. In 1950 46.9% of the labor force (539,271 persons) was in blue collar occupations (operators, craftsmen, service workers). By 1960 these workers numbered 600,121, an increase of 11.3% over 1950, but they accounted for only 44.4% of the entire labor force. Blue collar workers numbered 746,428 in 1970, an increase of 24.4% over 1960, but the share of this group in the total labor force declined slightly to 43.2%.

Within the blue collar employment sector, the number of craftsmen and service workers increased substantially between 1950 and 1970. The number of operators increased moderately while the number of nonfarm laborers declined.

TABLE 3. OCCUPATIONAL DISTRIBUTION OF VIRGINIA'S EMPLOYED LABOR FORCE: 1950, 1960, AND 1970

	1950		1960		1970	
	Number	Percent	Number	Percent	Number	Percent
Professional	94,690	8.2	153,729	11.5	262,677	15.2
Managerial	89,230	7.8	106,297	7.9	141,070	8.2
Clerical	128,273	11.2	188,234	14.0	294,256	17.0
Sales	72,872	6.3	93,967	7.0	108,834	6.3
Craftsmen	152,294	13.2	177,549	13.2	231,612	13.4
Operatives	223,106	19.4	240,899	18.0	278,034	16.1
Nonfarm Laborers	88,125	7.7	76,519	5.7	77,428	4.5
Farmers	102,057	8.9	58,945	4.4	23,399	1.4
Farm Laborers	62,616	5.4	36,275	2.7	19,747	1.1
Service Workers	75,746	6.6	101,526	7.6	159,354	9.2
Private Household Workers	43,999	3.8	50,697	3.4	35,937	2.1
Not Reported	17,156	1.5	56,163	4.2	94,784	5.5
Total	1,150,164	100.0	1,340,800	100.0	1,727,132	100.0

TABLE 4. INDUSTRIAL COMPOSITION OF VIRGINIA'S EMPLOYED WORK FORCE: 1950, 1960, AND 1970

Industrial Category	1950 Number	1950 Percent	1960 Number	1960 Percent	1970 Number*	1970 Percent	Percent Change 1950-1970
1. Agriculture, forestry, and fisheries	174,078	15.14	104,673	7.81	51,508	3.01	-70.41
2. Mining	28,985	2.52	19,277	1.44	15,969	0.93	-44.91
3. Construction	82,592	7.18	91,134	6.80	117,555	6.86	42.33
4. Durable goods manufacturing	90,664	7.88	124,155	9.26	161,150	9.40	77.74
5. Nondurable goods manufacturing	146,040	12.70	175,780	13.11	202,860	11.83	38.91
6. Transportation, communications, other public utilities	91,118	7.92	93,172	6.95	109,208	6.37	19.85
7. Wholesale trade	31,613	2.75	37,411	2.79	54,196	3.16	71.44
8. Retail trade	156,007	13.56	191,844	14.31	235,906	13.76	51.22
9. Finance, insurance, and real estate	30,084	2.62	47,123	3.51	71,748	4.19	138.49
10. Business and repair service	20,620	1.79	28,069	2.09	41,908	2.44	103.24
11. Personal services	84,969	7.39	95,632	7.13	83,830	4.89	-1.34
12. Entertainment and recreation services	6,913	0.60	7,705	0.57	10,122	0.59	46.42
13. Professional and related services	89,403	7.77	150,640	11.24	269,618	15.73	201.58
14. Public Administration	99,246	8.63	130,569	9.74	187,580	10.94	89.01
Not reported	17,832	1.55	43,616	3.25	101,092	5.90	466.90
Total	1,150,164	100.00	1,340,800	100.00	1,714,250	100.00	49.04

*Persons aged 16 years and over. A total of 12,882 persons aged 14-15 years are included in the occupational data of Table 3 but excluded here. Some 1,061 of these persons are employed in agriculture; the remaining 11,821 in other industries. Thus, of total employment in Virginia in 1970 of 1,727,132, some 52,569 or 3.04 percent are employed in the agricultural sector.

TABLE 5. DISTRIBUTION OF INCOME OF VIRGINIA FAMILIES: 1950, 1960, AND 1970

Income Category	1950 Number	1950 Percent	1960 Number	1960 Percent	1970 Number	1970 Percent	Percent Change 1950-60	Percent Change 1960-70	Percent Change 1950-70
less than $1,000	137,500	18.5	80,229	8.4	32,818	2.8	-41.6	-59.1	-76.1
$1,000-$1,999	137,930	18.6	85,883	9.0	43,531	3.7	-37.7	-49.3	-58.4
$2,000-$2,999	149,545	20.1	100,017	10.5	51,495	4.4	-33.1	-48.5	-65.5
$3,000-$3,999	119,115	16.0	106,901	11.2	61,252	5.3	-10.2	-42.7	-48.5
$4,000-$4,999	70,830	9.5	108,185	11.3	67,059	5.8	52.7	-38.0	-5.3
$5,000-$5,999	47,225	6.4	102,826	10.8	76,385	6.6	117.7	-25.7	61.7
$6,000-$6,999	28,730	3.9	84,835	8.9	79,662	6.9	195.2	-6.0	177.3
$7,000-$9,999	33,880	4.6	159,398	16.7	241,612	20.8	370.4	51.5	613.1
$10,000+	18,645	2.5	126,446	13.2	508,422	43.7	578.1	302.0	2,626.8
Total	743,400	100.0	954,720	100.0	1,162,256	100.0			
Median	$3,644		$4,964		$9,049		87.7	82.2	242.2

The number of persons employed in the private household sector increased 14.7% from 43,999 in 1950 to 59,461 in 1960. In both years this group accounted for a small share of Virginia's labor force (3.8% in 1950 and 3.4% in 1960). Between 1960 and 1970 the number of private household workers declined by 28.8% to slightly less than 36,000 persons, representing only 2.1% of the state's labor force. Over the two-decade period, employment in private households diminished by 18.3% or 8,062 persons. Data summarizing changes in the occupational distribution of Virginia's work force are given in Table 3.

3. Industrial Composition. The shift in the industrial composition of Virginia's labor force parallels the occupational data. Occupational data tell what members of the labor force do; industrial data describe the principal good or service produced by employers of the labor force. Data summarizing the industrial composition of Virginia's labor force are given in Table 4.

In the years 1950, 1960, and 1970, the largest single sector was manufacturing. This sector grew from 236,704 employees in 1950 (20.58% of employment) to 364,010 employees in 1970 (21.23% of employment). The overall increase in this sector was 53.78% from 1950 to 1970. Employment in durable goods manufacturing grew faster than employment in nondurable goods manufacturing. In 1950, the latter accounted for 61.7% of all employment in manufacturing. By 1970, it had fallen to 55.7%.

Over the twenty-year period, the fastest growing sector was professional and related services. In 1950, employment in this sector was 89,403 or 7.77% of the total. By 1970, it had risen to 269,618 or 15.73% of the total. Employment in this sector increased by 201.53% from 1950 to 1970. Other sectors which grew at a rate faster than the overall level (49.04% in the twenty-year period) include: finance, insurance, and real estate (138.49%); business and repair services (103.24%); public administration (89.01%); wholesale trade (71.44%); and retail trade (51.22%).

Industries which experienced growth, but at a rate lower than the state total include entertainment and recreation services (46.42%); construction (42.33%); and transportation, communication, and other public utilities (19.58%). Finally, employment diminished in three sectors: personal services (1.34%); mining (44.91%); and agriculture, forestry, and fisheries (70.41%).

C. Income

Significant changes occurred in the income level of Virginians between 1950 and 1970. In general, income increased sharply but at a slightly lower pace between 1960 and 1970. In 1950 the median income per family was $2,644, and by 1960 it had increased by 87.7% to $4,964. An additional increase of 82.3% between 1960 and 1970 created a median income of $9,049 in 1969. It should be realized that income data are in current dollars--that is, not adjusted for the diminution of purchasing power (inflation) that has been experienced in recent years. If we convert family income to constant (1967) dollars, we would find that median family income in 1950 would have been $3,704, and that in 1970 it would be $8,244. Thus, in terms of the real purchasing power of family income, the change from 1950 to 1970 was 122.6%. (See Table 5.)

Nearly one-fifth of all Virginia families received less than $1,000 of income in 1950. By 1960 this share of families dropped to 8.9%, and in 1969 only 2.8% had an income less than $1,000. Furthermore, in 1950 only 2.5% of Virginia families had incomes of $10,000 or more. The number grew to 13.2% by 1960, and in 1969 a spectacular 43.7% of Virginia families had incomes of at least $10,000.

In 1970 for the first time, data which show the incidence of poverty in the state were made available. "Poverty" is defined as a level of income below the guidelines established by the Social Security Administration. The poverty level varies according to household size, age and sex of head, and farm-nonfarm residence (see Table 6). The value of the poverty level ranges from $6,665 for a nonfarm family of seven with a male head to $1,489 for a single female aged 65 and over living on a farm.

In Virginia 12.3% of all families received income in 1969 which placed them below the poverty guidelines. This amounted to 143,005 families or 575,330 persons. Among these families, mean income was only $2,025. Additionally, 115,285 single persons, living alone, received income below the poverty level; these 115,285 represent 36.9% of all individuals living by themselves in one person households. All told, some 690,615 Virginians were in a poverty status based on 1969 income; this is 14.9% of the State's enumerated 4,648,494 persons.

TABLE 6. POVERTY INCOME CRITERIA FOR FAMILIES, BY AGE AND SEX OF HEAD, FARM OR NONFARM RESIDENCE, AND NUMBER OF CHILDREN UNDER AGE 18

Family Size	None	1	2	3	4	5	6 or more
Male Head—Nonfarm							
1. Under 65 years old...	$1,975	---	---	---	---	---	---
65 years old and over	1,774	---	---	---	---	---	---
2. Under 65 years old...	2,469	$2,766	---	---	---	---	---
65 years old and over	2,216	2,766	---	---	---	---	---
3.....	2,875	2,968	$3,137	---	---	---	---
4.....	3,790	3,847	3,715	$3,902	---	---	---
5.....	4,574	4,630	4,481	4,368	$4,462	---	---
6.....	5,247	5,265	5,153	5,041	4,891	$4,967	---
7 or more.....	6,609	6,665	6,535	6,422	6,274	6,049	$5,994
Male Head—Farm							
1. Under 65 years old...	$1,679	---	---	---	---	---	---
65 years old and over	1,508	---	---	---	---	---	---
2. Under 65 years old...	2,099	$2,351	---	---	---	---	---
65 years old and over	1,884	2,351	---	---	---	---	---
3.....	2,444	2,523	$2,666	---	---	---	---
4.....	3,222	3,270	3,158	$3,317	---	---	---
5.....	3,888	3,936	3,809	3,713	$3,793	---	---
6.....	4,460	4,475	4,380	4,285	4,157	$4,222	---
7 or more.....	5,618	5,665	5,555	5,459	5,333	5,142	$5,095
Female Head—Nonfarm							
1. Under 65 years old...	$1,826	---	---	---	---	---	---
65 years old and over	1,752	---	---	---	---	---	---
2. Under 65 years old...	2,282	$2,491	---	---	---	---	---
65 years old and over	2,190	2,491	---	---	---	---	---
3.....	2,781	2,651	$2,931	---	---	---	---
4.....	3,641	3,771	3,753	$3,715	---	---	---
5.....	4,368	4,500	4,481	4,444	$4,294		
6.....	5,096	5,191	5,153	5,115	4,948	$4,798	---
7 or more.....	6,403	6,497	6,478	6,422	6,255	6,124	$5,825
Female Head—Farm							
1. Under 65 years old...	$1,552	---	---	---	---	---	---
65 years old and over	1,489	---	---	---	---	---	---
2. Under 65 years old...	1,940	$2,117	---	---	---	---	---
65 years old and over	1,862	2,117	---	---	---	---	---
3.....	2,364	2,253	$2,491	---	---	---	---
4.....	3,095	3,205	3,190	$3,158	---	---	---
5.....	3,713	3,825	3,809	3,777	$3,650	---	---
6.....	4,332	4,412	4,380	4,348	4,206	$4,078	---
7 or more.....	5,443	5,522	5,506	5,459	5,317	5,205	$4,951

Source: Census, Public Use Samples of Basic Records From the 1970 Census: Description and Technical Documentation (Government Printing Office, 1972) p. 122.

The incidence of poverty is strongly influenced by the race, age, and sex of the family head and by the place of residence. In 1970 there were more poor families with a white head (88,065) than a nonwhite head (54,940); however, only 9.0% of all families with a white head had incomes below the poverty level compared to 29.2% of families with a nonwhite head. Only 10.6% of families with head aged under 65 were termed poor compared to 25.7% of families with head aged 65 and over; only 11.6% of all families, but 24.2% of poor families, were headed by a person aged 65 and over. Of the 47,505 families (33.2% of all families) headed by a female, some 36.8% were below the poverty level compared to 9.2% of families with a male head. Though only 37.2% of all families in the State lived in rural areas, rural families comprised 53.8% (76,916) of all poor families. Only 9.1% of urban families had incomes below the poverty level compared to 17.8% of rural families.

D. Summary

In summary, then, recent census data have shed considerable light upon the changing status of Virginians. In the twenty years between 1950 and 1970, the median number of school years attained by the average adult (25 years old or over) rose from slightly more than an elementary school education (8.5 years) to near completion of high school (11.7 years). In 1950, only 28.4% of all Virginians (25+) had completed high school; by 1970, this increased to 47.8%.

The median income of Virginia families rose by 242.2% in the two decade period from an initial level of $2,644 to a terminal level of $9,049. Only 2.5% of Virginia's families had income in excess of $10,000 in 1950, compared with 43.7% in 1970.

Employment in Virginia increased by 49.0% between 1950 and 1970, from 1.15 million in 1950 to 1.71 million in 1970. The demographic, occupational, and industrial composition of the state's labor force shifted dramatically over the period. Females became an increasingly important factor in the state's labor force. In 1950, 27.3% of the labor force was female--27.4% of all females over aged 14 were in the labor force in that year, compared with 71.8% of all males. By 1970, the percentage of the labor force that was female had risen to 39.6% and the labor force participation rate among females had increased to 40.1%.

The occupational and industrial composition of the labor force show a pronounced move out of the agricultural sector. In 1950, 14.3% of the labor force, 164,673 persons, was employed in agricultural occupations (farmers, farm managers, farm foremen, farm laborers); by 1970, this had decreased to 43,146 persons, or 2.5% of the employed labor force. Over the same period, the number of persons engaged in white collar occupations rose from 385,065, or 33.5% of the state's employed labor force in 1950 to 806,837 or 46.7% in 1970.

These shifts are also evident in the industrial composition of the state's labor force. The fastest growing industrial groups (in terms of total employment) between 1950 and 1970 were professional services; finance, insurance, and real estate; business services; and public administration. On the other hand, employment in agriculture, forestry, and fisheries declined by over 70% and employment in mining declined by nearly 50% from 1950 to 1970.

Chapter II.

Mobility

The mobility analysis of this chapter focuses on two factors: place of birth and place of residence in 1965. The data on mobility should not be confused with data on net migration which were presented in Volume II. Net migration represents the balance between those moving into and moving out of an area in a specific time period. Mobility data relates to place of birth or earlier residence for persons living in an area at the time the census was taken.

A. Place of Birth

Place of birth data are useful in determining the longitudinal (lifetime) movement of a population. An area which attracts many new residents is likely to have a relatively low proportion of its population born in the state of residence. On the other hand, an area which does not attract many new residents (and is also probably prone to outmigration) tends to have a relatively high concentration of persons born in the state of residence.

In 1970 slightly more than 2.9 million of the 4,648,494 Virginia residents (62.5%) were born in Virginia. As expected, the highest incidence of non-natives occurred in those areas which had experienced heavy inmigration--the Northern Virginia area (Planning District 8) and the Newport News-Hampton area (Planning District 21). In both of these localities more than half of the 1970 resident population was born outside the State. Additionally, in the Norfolk-Virginia Beach-Portsmouth area (Planning District 20) only slightly more than half the population was native to Virginia. These were the only three planning districts in the State with an incidence of non-native population higher than the state average; however, their effect on the state average was great since these three areas represented about 43% of the State's population in 1970. In addition, about two-thirds (67.8%) of the population in the Petersburg-Hopewell area (Planning District 19) was born in Virginia.

A factor which had a significant effect upon these relatively low rates of Virginia-born residents was the high concentration of military personnel in these four areas. In the entire State of Virginia in 1970 there were 171,983 males and 3,735 females in the Armed Forces. Of these, 162,868 of the males and 3,543 of the females were located in these four areas. The vast majority of these persons were not born in Virginia and consequently tended to inflate the size of the non-native population.

Another significant factor was the presence of a college or university with a high percentage of out of state students. This was most evident in the Thomas Jefferson Planning District (no. 10), site of the University of Virginia. According to the State Council of Higher Education for Virginia,* 4,246 of the University's 9,633 students enrolled in the regular session of the 1969-70 academic year (the period when the census was taken) were from outside the state. No other public institution in the state, except Virginia Military Institute, had such a high proportion. These out of state students represented about 13% of all persons in the planning district born outside Virginia. When faculty, staff, and spouses of students are considered, a large institution can greatly affect the population of an area.** This same factor was in effect in the New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University, although the share of out of state students at VPISU is about half of the University of Virginia.

Despite the importance of military and college populations in some regions in the State, the bulk of migration to or from any given area was related to other causes. In order to suggest the causal nexus between the share of the

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*Annual Student Enrollment Report--Controlled Institutions of Higher Education, (Richmond, 1970), p. 18.

**This point is also brought out in reference to age composition in A Profile of the Human Resources of Charlottesville-Albemarle (Charlottesville, 1972), pp. 6-9.

population born in the State and the role of migration in changing the size and composition of an area, the simple coefficient of rank correlation between the percentage of the population born in Virginia and the rate of net migration from 1960 to 1970 for all planning districts was calculated. (This statistic determines the degree of association between two ranked scales.) Planning districts were ranked by rate of net migration (from high to low) and by the percentage of the population born in Virginia (from high to low). Since inmigration lowers the share born in Virginia, the rank correlation coefficient was expected to be negative. The value of the coefficient was -.7716, which differed significantly from zero at the .01 level of confidence (that is, there were more than 99 chances out of one hundred that this difference was a true one and not a random occurence).

B. Residence in 1965

Another measure of mobility was the volume of interstate inmigration that occurred between 1965 and 1970. This measure shows what portion of the population of an area was made up of recent newcomers from out of state and from which portion of the country (other South, Northeast, North Central, and West) these newcomers came.

Of the 3,936,536 Virginians over age 5 (in 1970) whose residence was reported to be in the United States in 1965, 3,374,701 or 85.7% lived in Virginia. Of the remaining 561,835, 265,754 (or 47.3%) lived in other southern states (in 1965), 125,743 (or 22.4%) lived in the Northeast, 90,817 (or 16.2%) lived in north central states, and the remaining 79,521 (or 14.1%) lived in the West.*

In areas of rapid population flux, such as Northern Virginia and Tidewater, only 70 to 80% of the 1970 population lived in Virginia in 1965. Other areas with a relatively high incidence of out of state newcomers included the Petersburg, Fredericksburg, and Charlottesville areas. In areas of slow or negative population growth, the share of residents who lived in Virginia in 1965 tended to be about 95%. Interestingly enough, several metropolitian areas of the State, such as Richmond, Roanoke, and Lynchburg, were characterized by a relative lack of interstate inmigration in the period from 1965 to 1970.

In Virginia planning districts a majority of inmigrants were from the South in all cases except in those areas of high out of state inmigration, listed above and Planning District 18, consisting of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex counties. This district had the highest portion of inmigrants (33.4%) from the Northeast. This fact, coupled with high rates of inmigration observed for older whites,** suggests that this area might have been serving as a retirement destination by 1970. Migration from the Northeast was also relatively high (more than 25% of all interstate inmigrants to the district from 1965 to 1970) in the planning districts centering on Charlottesville, Lynchburg, Farmville, and the Eastern Shore.

Migration from the North Central States was exceptionally high (27.1%) in extreme Southwest Virginia (Planning District 1). It was somewhat higher than average in Planning District 2 (also in Southwest Virginia) as well as in the four areas with a heavy concentration of military population (Northern Virginia, Petersburg, Newport News-Hampton, and Norfolk-Virginia Beach-Portsmouth). These same four areas also had the greatest influx of migrants from western states.

In summary, the two measures employed here, state of birth and residence in 1965, appear to be closely correlated. Areas with a relatively low proportion of native Virginians tended to be the same areas with a relatively large number of interstate inmigrants during the 1965-1970 period. Furthermore, these same areas tended to attract migrants from throughout the country to a much greater extent than did other areas in the State. The migrants in these latter areas more likely originated in other southern states. (See Table 7.)

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*The composition of these areas is as follows: South--Delaware, Maryland, District of Columbia, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas; Northeast--Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, and Pennsylvania; North Central--Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota; West--Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, and Washington.

**See Virginia's Population: A Decade of Change. Net Migration for State Planning Districts (Charlottesville, University of Virginia, 1972), p. 27.

TABLE 7. STATE OF BIRTH OF THE POPULATION AND RESIDENCE IN 1965, VIRGINIA, BY PLANNING DISTRICTS

Area	1970 Population	State of Birth		Population 5+ With 1965 Residence Reported in U.S.	Residence in 1965				
		Percent Born in Virginia	Percent Born Elsewhere		Percent Living In Virginia	Percent Living in Other States	Percent Living in Other Southern States	Percent Living in Northeast	Percent in North Central States	Percent Living in West
Lenowisco	84,645	83.7	16.3	73,513	94.5	5.5	3.4	0.2	1.5	0.4
Cumberland Plateau	112,497	83.6	16.4	96,847	94.2	5.8	4.1	0.3	1.1	0.3
Mount Rogers	159,412	82.2	17.8	138,048	93.8	6.2	4.7	0.5	0.7	0.3
New River Valley	114,833	78.4	21.6	98,649	90.8	9.2	5.3	1.6	1.4	0.9
Fifth	231,175	78.0	22.0	199,112	92.2	7.8	5.0	1.2	1.1	0.5
Central Shenandoah	186,306	79.3	20.7	161,994	92.4	7.6	4.2	1.8	1.0	0.6
Lord Fairfax	106,372	78.6	21.4	94,446	93.8	6.2	4.2	1.1	0.7	0.2
Northern Virginia	921,237	30.3	69.7	718,673	70.4	29.6	12.5	6.9	4.9	5.2
Rappahannock-Rapidan	72,222	78.2	21.8	61,029	93.8	6.2	3.3	1.5	0.8	0.6
Thomas Jefferson	115,235	73.1	26.9	97,870	88.5	11.5	5.8	3.6	1.4	0.7
Central Virginia	165,997	83.3	16.7	144,104	94.5	5.5	3.0	1.4	0.7	0.4
West Piedmont	217,874	83.8	16.2	187,732	95.3	4.7	3.5	0.7	0.4	0.2
Southside	82,563	87.4	12.6	72,181	95.5	4.5	3.1	0.9	0.3	0.2
Piedmont	76,245	85.8	14.2	65,822	96.0	4.0	2.2	1.1	0.5	0.2
Richmond Regional	547,542	73.5	26.5	462,462	92.3	7.7	4.5	1.7	1.0	0.5
Radco	77,425	71.1	28.9	64,463	88.1	11.9	5.9	2.9	1.9	1.3
Northern Neck	36,348	84.8	15.2	32,260	94.9	5.1	3.6	1.2	0.0	0.3
Middle Peninsula	47,609	84.7	15.3	41,826	96.4	3.6	1.7	1.2	0.5	0.2
Crater	161,059	67.8	32.2	131,933	86.6	13.4	6.4	2.7	2.8	1.5
Southeastern Virginia	769,371	51.7	48.3	632,150	79.4	20.6	8.4	5.1	3.7	3.4
Peninsula	319,081	49.5	50.5	249,113	78.1	21.9	10.4	4.4	3.8	3.6
Accomack-Northampton	43,446	84.4	15.6	37,862	95.2	4.8	3.0	1.4	0.2	0.2
State	4,648,494	62.5	37.5	3,862,089	85.7	14.3	6.8	3.2	2.3	2.0

Chapter III.

Educational Achievement

Two types of data are used in this analysis of educational achievement: the median number of school years completed and the percentage distribution of different levels of educational achievement. The data are for Virginians 25 and over in 1970.

A. Median Number of School Years

The state median number of school years completed, 11.7, was higher than the figure recorded in any single planning district, with the exception of Northern Virginia (13.1 years) and Peninsula (12.6 years). Generally, this statistic was higher in metropolitan areas; the five planning districts which had the highest median number of school years completed were either fully or predominately metropolitan.

The median number of school years completed differed by sex. For the State and for a majority of the planning districts, the median level of educational achievement was higher among females than males. However, in the two planning districts with a median level of education greater than the state average, this relationship was reversed--that is, the median level was higher for males.

B. Distribution of Educational Achievement

The distribution of persons over age 25 by years of school completed in Northern Virginia was also quite different from that of the remainder of the State. This area had the lowest percentage of persons with no education (0.48%) and the lowest percentage of persons with some education but less than a high school education (24.68%). Additionally, this area had the highest percentage of persons with a high school diploma (31.92%), those with 1-3 years of post-secondary education (16.14%), and those with four or more years of college (26.78%). Although Northern Virginia accounted for only 19.6% of all persons in the State aged 25 and over, 42.4% of all such persons with four or more years of post-secondary education lived there.

This is indicative of the tendency for well-educated persons to be grouped in metropolitan areas. The state total of 12.30% of the population aged 25 and over with 4 or more years of post high school education experience may have been somewhat inflated by Northern Virginia. If all of the State except Northern Virginia were considered, only 8.76% of all persons over age 25 would have four or more years of education beyond the high school level. Individual planning districts which exceeded this total by more than 10% (i.e., with at least 9.64% of the population aged 25 and over having four or more years of post-secondary education) include New River Valley Planning District (no. 4) (10.26%); Thomas Jefferson Planning District (no. 10) (15.70%); Richmond Regional Planning District (no. 15) (12.07%); and Peninsula Planning District (no. 21) (12.05%). These areas include two large metropolitan areas (Richmond and Newport News-Hampton) and two relatively large University communities (VPISU in Blacksburg and UVA in Charlottesville).

In comparing educational achievement by sex, there was a higher proportion of males with no education (1.95%) and less than a full high school education (51.51%) than females (1.32 and 49.76%, respectively). On the other hand, there was also a greater proportion of males with four or more years of post-secondary education (15.60%) than females (9.30%). In brief, the educational composition of males was more skewed at both ends of its distribution than that of females (see Figure 2 and Table 8).

Figure 2. Percentage Distribution of Years of School Completed, by Sex; Virginia: 1970

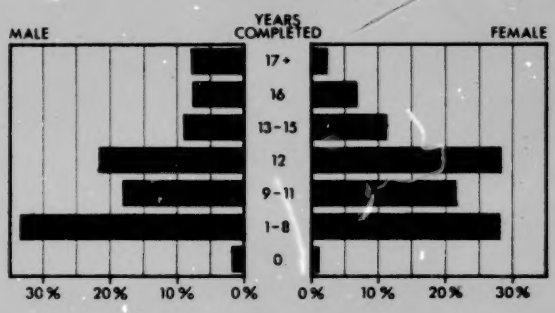

TABLE 8. EDUCATION CHARACTERISTICS OF VIRGINIA, BY PLANNING DISTRICTS: 1970

Area	Population 25+	Median Years of School	Percent With No School	Percent With 1-11 Years	Percent With 12 Years	Percent With 13-15 Years	Percent With 16 Years	Percent With 17+ Years	Median School Years Males	Median School Years Females
Lenowisco	47,563	8.1	2.91	73.34	15.84	3.98	2.75	1.17	7.8	8.3
Cumberland Plateau	57,963	8.1	3.09	73.43	14.49	5.60	2.42	0.98	7.7	8.4
Mount Rogers	91,271	9.1	2.11	69.17	17.20	6.70	3.21	1.61	8.6	9.5
New River Valley	57,894	10.5	1.78	57.66	22.08	8.21	5.35	4.91	10.3	10.7
Fifth	131,889	11.6	1.11	49.37	29.34	11.02	6.24	2.93	11.4	11.8
Central Shenandoah	101,761	10.8	1.68	55.37	24.59	8.96	5.56	3.84	10.4	11.2
Lord Fairfax	60,671	10.2	1.49	61.23	24.39	7.71	3.81	1.88	9.6	10.7
Northern Virginia	480,573	13.1	0.48	24.68	31.92	16.14	14.26	12.52	13.7	12.6
Rappahannock-Rapidan	39,457	9.7	3.01	60.37	22.08	7.64	4.64	2.26	9.0	10.4
Thomas Jefferson	61,077	11.0	3.22	52.99	20.09	8.96	7.16	8.54	10.6	11.3
Central Virginia	91,565	10.2	3.69	57.77	22.49	8.00	5.17	2.92	9.7	10.6
West Piedmont	117,957	9.6	2.67	64.62	20.89	6.40	3.62	1.80	9.2	9.9
Southside	44,123	9.1	2.63	69.14	17.37	6.12	3.08	1.66	8.3	9.9
Piedmont	40,859	9.0	3.78	67.79	15.89	6.38	4.03	2.13	8.2	9.8
Richmond Regional	300,035	11.4	1.16	52.72	23.26	10.78	7.62	4.45	11.2	11.6
Radco	39,511	10.8	1.45	57.82	24.73	6.77	5.28	3.95	10.4	11.2
Northern Neck	21,247	9.4	2.38	64.20	20.52	6.83	3.77	2.30	8.5	10.2
Middle Peninsula	27,642	10.1	1.90	60.17	23.15	7.85	4.57	2.38	9.2	11.0
Crater	80,480	10.4	2.50	58.52	23.08	8.28	5.27	2.36	10.2	10.6
Southeastern Virginia	371,988	11.3	1.49	52.59	27.30	9.72	5.69	3.22	11.2	11.4
Peninsula	154,781	12.0	1.28	46.49	29.02	11.17	7.60	4.45	12.1	12.0
Accomack-Northampton	25,685	9.4	2.89	66.02	19.14	7.12	3.27	1.55	8.7	10.0
State	2,446,082	11.7	1.62	50.60	25.22	10.25	7.22	5.08	11.4	11.8

Chapter IV.

Employment and Labor Force

A. Labor Force Participation

The labor force participation rate is the percentage of population aged 16 and over which is in the civilian labor force. Labor force participation in an area is dependent upon the relative number of job opportunities and intervening variables, such as military service or college enrollment, which tend to limit labor force participation. Additionally, the age composition of a population can have a significant effect upon the labor force participation rate. For example, a high proportion of persons aged 65 and over would contribute to a low labor force participation rate.

In Virginia 67.9% of all males aged 16 and over and 42.1% of all similarly aged females were in the labor force as of April 1, 1970. The amount of variation across the State was considerable. The planning district with the lowest labor force participation rate among males was the Southeastern Virginia Planning District (no. 20), which includes the Norfolk-Virginia Beach-Portsmouth metropolitan area where only 53.9% of all males aged 16 and over participated in the labor force (see Table 9). The reason for the low rate was the high concentration of military personnel in the area which by definition is not accounted for in the labor force participation rate. This factor was also very evident in the Crater Planning District (no. 19), site of Fort Lee, where the male labor force participation rate was 57.9% and in the Peninsula Planning District (no. 21) where it was only 59.7%.

The effect of a large university in a relatively small area was quite evident in the New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University, and the Thomas Jefferson Planning District (no. 10), site of the University of Virginia. In these areas, male college students accounted for approximately 20% of all males over the age of 15. Consequently, labor force participation rates in these two areas were relatively low--68.7% in Planning District 4 and 67.6% in Planning District 10.

Several areas with a relatively large number of older persons in the population also had low labor force participation rates. This was particularly true in the Lenowisco Planning District (no. 1) where 10.6% of all males were aged 65 and over and the labor force participation rate was only 62.9%; Piedmont Planning District (no. 14) (11.0% and 69.2% respectively); Northern Neck Planning District (no. 17) (13.2% and 67.4%); and to a lesser extent, the Accomack-Northampton Planning District (no. 22) (13.2% and 70.8%).

Labor force participation rates among females were somewhat less than those for males in all cases. The state labor force participation rate among women aged 16 and over was 42.1%, or nearly two-thirds of the observed male rate of 67.9%. As noted in the introductory chapter, the labor force participation rate for women increased considerably between 1950 and 1970.*

As was true of males, there was considerable variation in labor force participation among females. However, there is no apparent explanation for these differences. The highest rates were found in two large metropolitan areas--the Virginia portion of the Washington, D.C. Standard Metropolitan Statistical Area (Planning District 8) with 47.4% and Planning District 15 (which encompasses the Richmond Standard Metropolitan Statistical Area) with 47.0%. Yet, the second largest metropolitan area in the state, Norfolk-Virginia Beach-Portsmouth (contained in Planning District 20) had a low rate of 38.5%.

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*Rates in this chapter pertain strictly to the population aged 16 and over. In the introductory chapter, where changes in the past two decades were considered, the base of analysis was the population aged 14 and over. Consequently, the rates mentioned in this chapter are not strictly comparable with those analyzed in the first chapter. This difference is due to changes in published census data in the 1970 census.

As for males, college attendance and advanced age (over 65) depressed the female labor force participation rate. Also, the presence of preschool children in a household tended to decrease the rate. College attendance appears to have been a significant factor in the Piedmont Planning District (no. 14), site of Longwood College in Farmville with 38.3%; the Radco Planning District (no. 16), site of Mary Washington College in Fredericksburg with 38.4%; and perhaps New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University and Radford College, 40.1%. As was the case for males, college enrollment had a relatively large effect when the number of college students was large relative to the population as a whole. When this is not the case, the effect is minimal. For example, The Central Virginia Planning District (no. 11) contains two well known women's colleges (Sweet Briar College and Randolph Macon College for Women), yet the female labor force participation rate was a relatively high 43.8%.

The effect of a relatively large number of aged persons in the population was evident in the Lenowisco Planning District (no. 1) (12.6% of the female population was aged 65 and over; labor force participation rate of 22.9%); Mount Rogers Planning District (no. 3) (12.3% and 38.4%); Rappahannock-Rapidan Planning District (no. 9) (12.4% and 38.8%); Piedmont Planning District (no. 14) (13.1% and 38.3%); Northern Neck Planning District (no. 17) (15.5% and 37.8%); and Middle Peninsula Planning District (no. 18) (14.9% and 35.7%). However, in the Eastern Shore Planning District (no. 22), which had the highest percentage among all planning districts of women aged 65 and over (16.8%), the female labor force participation was a high 42.7%.

TABLE 9. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY PLANNING DISTRICTS: 1970

Area	Total Population Aged 16+	Civilian Labor Force	Labor Force Participation Rate	Percent of Civilian Labor Force Unemployed
Lenowisco				
Male	28,220	17,740	62.9	4.3
Female	31,538	7,235	22.9	5.4
Total	59,758	24,975	41.8	4.5
Cumberland Plateau				
Male	36,685	23,511	64.1	3.8
Female	38,626	9,016	23.3	6.1
Total	75,311	32,527	43.2	4.4
Mount Rogers				
Male	54,057	38,230	70.7	3.8
Female	60,363	23,187	38.4	4.0
Total	114,420	61,417	53.7	4.1
New River Valley				
Male	41,529	28,523	68.7	3.2
Female	42,419	17,012	40.1	5.4
Total	83,948	45,535	54.2	4.0
Fifth				
Male	77,030	59,172	76.8	1.8
Female	88,301	36,565	41.4	3.4
Total	165,331	95,737	57.9	2.4
Central Shenandoah				
Male	63,233	47,511	75.1	2.1
Female	70,510	30,364	43.1	3.4
Total	133,743	77,875	58.2	2.6
Lord Fairfax				
Male	35,900	27,642	77.0	2.4
Female	39,466	16,589	42.0	4.6
Total	75,366	44,231	58.7	3.2
Northern Virginia				
Male	304,090	213,967	70.4	1.9
Female	322,913	153,106	47.4	2.6
Total	627,003	367,073	58.5	2.2

TABLE 9. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY PLANNING DISTRICTS: 1970 (Continued)

Area	Total Population Aged 16+	Civilian Labor Force	Labor Force Participation Rate	Percent of Civilian Labor Force Unemployed
Rappahannock-Rapidan				
Male	24,146	18,269	75.7	1.9
Female	25,072	9,736	38.8	2.8
Total	49,218	28,005	56.9	2.2
Thomas Jefferson				
Male	41,516	28,067	67.6	2.4
Female	40,471	18,057	44.6	2.6
Total	81,987	46,124	56.3	2.5
Central Virginia				
Male	54,578	41,132	75.4	2.0
Female	62,077	27,177	43.8	3.0
Total	116,655	68,309	58.6	2.4
West Piedmont				
Male	71,535	55,780	78.0	1.8
Female	79,130	36,900	46.6	4.7
Total	150,665	92,680	61.5	2.9
Southside				
Male	26,867	19,083	71.0	2.6
Female	29,284	11,826	40.4	6.0
Total	56,151	30,909	55.1	3.9
Piedmont				
Male	25,019	17,312	69.2	2.8
Female	27,891	10,673	38.3	5.2
Total	52,910	27,985	52.9	3.7
Richmond Regional				
Male	178,292	137,686	77.2	1.7
Female	207,335	97,458	47.0	2.9
Total	385,627	235,144	61.0	2.2
Radco				
Male	25,657	17,970	70.0	1.5
Female	27,563	10,588	38.4	3.2
Total	53,220	28,558	53.7	2.1
Northern Neck				
Male	12,215	8,232	67.4	5.2
Female	13,373	5,052	37.8	7.1
Total	25,588	13,284	51.9	6.0
Middle Peninsula				
Male	16,264	11,819	72.7	1.7
Female	17,430	6,229	35.7	4.5
Total	33,694	18,048	53.6	2.7
Crater				
Male	57,525	33,293	57.9	2.2
Female	53,732	22,200	41.3	4.5
Total	111,257	55,493	49.9	3.1
Southeastern Virginia				
Male	275,727	148,568	53.9	2.5
Female	253,957	97,769	38.5	5.9
Total	529,684	246,337	46.5	3.9
Peninsula				
Male	110,693	66,035	59.7	2.5
Female	106,353	43,315	40.7	5.1
Total	217,046	109,350	50.4	3.6
Accomack-Northampton				
Male	14,181	10,033	70.8	4.7
Female	16,638	7,111	42.7	13.7
Total	30,819	17,144	55.6	8.4
State				
Male	1,574,959	1,069,536	67.9	2.3
Female	1,654,442	697,204	42.1	4.0
Total	3,229,401	1,766,740	54.7	3.0

The effect of the presence of young children is generally to depress labor force participation among females. As the data in Table 10 show, the labor force participation rate of women with children under 5 years of age was 33.8%, while that for women without young children was 44.2%. A similar relationship held in most planning districts of the state. In those districts where the relationship was reversed, it is possible that the age distribution of women with young children was sufficiently different from that of women without young children to produce this result. That is, that in these areas, women with young children may have tended to be in the peak age groups of labor force participation, while those without young children may have tended to be in age groups characterized by lower rates of labor force participation.

As expected, areas with a high concentration of women with children under age six generally had a low overall rate of labor force participation. There was one significant exception. The Northern Virginia area, with the second highest incidence of women with young children (21.7%) had the highest overall rate of labor force participation --47.4%. A contributing factor to this anomaly may have been the wide differential in labor force participation rates between women with and without young children. Women with children between the ages of zero and five had a relatively low rate of participation--only 29.4%. On the other hand, over half of the women without young children, 52.4% were participating in the labor force. This disparity was also in evidence in the Cumberland Plateau, Southeastern Virginia, and Peninsula Planning Districts (nos. 2, 20 and 21), although the overall rates of participation were much lower in these three areas.

In summary, several intervening variables, including military service, college attendance, old age, and maternity, limit labor force participation. In an effort to remove these factors from analysis and determine what might be called a true labor force participation rate (and hopefully a measure of job opportunity in areas across the state), the data in Table 11 show the number of Virginians over age 16, the number in military service, the number in colleges, the number over age 65, and half of those women with children under six. The latter element clearly introduces some bias since the assumption is made without empirical basis that half of these women would participate if they had the opportunity. This is a source of bias because the actual rate is nearly 50% in the West Piedmont, Southside, Piedmont, and Accomack-Northampton Districts (nos. 12, 13, 14, and 22), but less than 30% in Lenowisco, Cumberland Plateau, Northern Virginia, and Southeastern Virginia (nos. 1, 2, 8, and 20).

The data in Table 11 show that the true state labor force participation rate was 73.84%. While the assumptions implicit in the derivation of this figure--namely that those in the military, in college, or over age 65 were not in the labor force--are clearly invalid to some extent*, the exclusion of these categories as well as some women with young children removed most of the obvious factors which inhibit labor force participation.

The data in Table 11 show that removal of persons relatively unlikely to be in the labor force considerably increased the overall labor force participation rate for the State from 54.7% to 73.8%) and all areas in the State. The two planning districts in extreme Southwest Virginia had exceptionally low rates of labor force participation, suggesting that there was a dearth of job opportunities in the area. To a lesser extent, this also appears to have been true in the Mount Rogers, Southside, Northern Neck and Middle Peninsula districts (nos. 3, 13, 17, and 18). In areas with a heavy concentration of military personnel, the rate was also relatively low, perhaps suggesting that military dependents were less likely to have participated in the labor force than were civilians of comparable status.

B. Unemployment

An unemployed person is defined as a civilian who has no job, is actively seeking work, and is available when a job is found.** The rate of unemployment is defined as the percentage of persons in the labor force who are actively seeking work. For the entire state, 3.0% of all members of the labor force

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*The method of collecting the census prevented a person in military service from being included in the civilian labor force. However, college students working full or part time or looking for work were included, as were all persons aged 65 and over either working or actively seeking work.

**U.S. Department of Labor, Bureau of Labor Statistics, How the Government Measures Unemployment (Washington: 1967), p. 3.

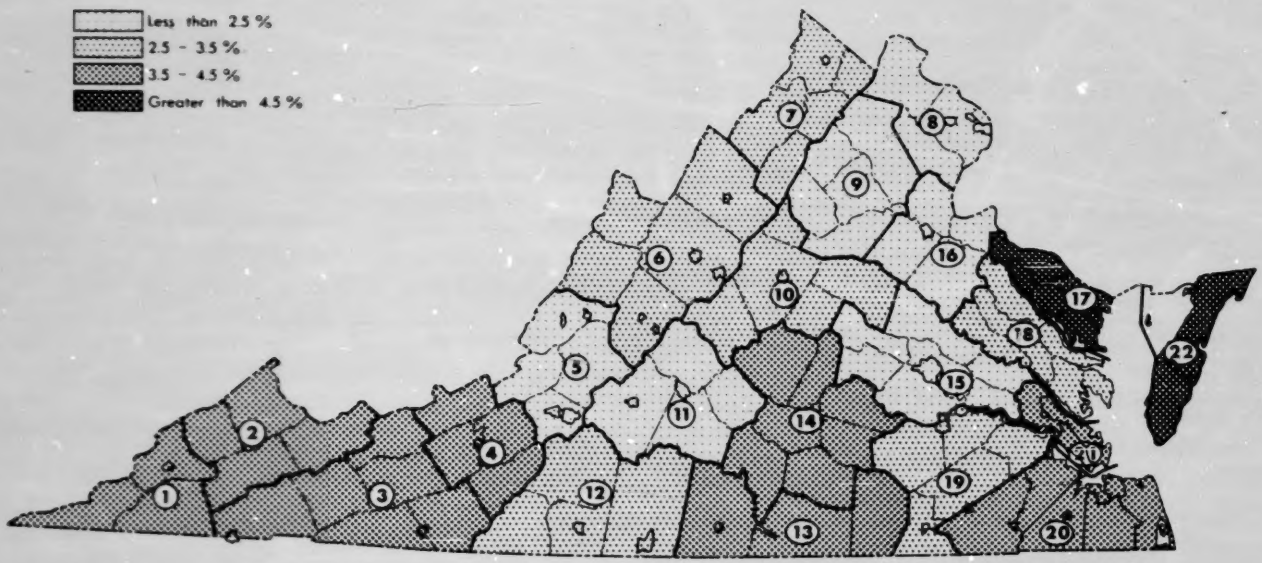
TABLE 10. LABOR FORCE PARTICIPATION RATES OF WOMEN, BY PRESENCE OF CHILDREN AGED 0-5, VIRGINIA, BY PLANNING DISTRICTS: 1970

Area	Women Aged 16+	Labor Force Participation Rate	Number With Children 0-5	Number In Labor Force	Labor Force Participation Rate Women With Children 0-5	Women Without Children 0-5	Number In Labor Force	Labor Force Participation Rate	Labor Force Participation Rate For Womer Without Young Children / Labor Force Participation Rate For Women With Young Children	Percent Women 16+ With Children 0-5
Lenowisco	31,538	22.9	5,593	1,007	18.0	25,945	6,228	24.0	1.3333	17.7
Cumberland Plateau	38,626	23.3	7,957	1,187	14.9	30,669	7,829	25.5	1.7111	20.6
Mount Rogers	60,363	38.4	10,478	4,094	39.1	49,885	19,093	38.3	.9795	17.4
New River Valley	42,419	40.1	8,132	2,995	36.8	34,287	14,017	40.9	1.1100	19.2
Fifth	88,301	41.4	15,291	5,081	33.2	73,010	31,484	43.1	1.2976	17.3
Central Shenandoah	70,510	43.1	12,163	4,903	40.3	58,347	25,461	43.6	1.0826	17.3
Lord Fairfax	39,466	42.0	7,031	2,707	38.5	32,435	13,882	42.8	1.1117	17.8
Northern Virginia	322,913	47.4	70,088	20,570	29.4	252,825	132,536	52.4	1.7860	21.7
Rappahannock-Rapidan	25,072	38.8	4,721	1,589	33.7	20,351	8,147	40.0	1.1892	18.8
Thomas Jefferson	40,471	44.6	7,608	3,072	40.4	32,863	14,985	45.6	1.1293	18.8
Central Virginia	62,077	43.8	10,837	4,561	42.1	51,240	22,616	44.1	1.0487	17.5
West Piedmont	79,130	46.6	14,947	7,281	48.7	64,183	29,619	46.2	.9474	18.9
Southside	29,284	40.4	5,099	2,345	46.0	24,185	9,481	39.2	.8523	17.4
Piedmont	27,891	38.3	4,629	2,093	45.2	23,262	8,580	36.9	.8157	16.6
Richmond Regional	207,335	47.0	36,612	13,914	38.0	170,723	83,544	48.9	1.2879	17.7
Radco	27,563	38.4	5,536	1,887	34.1	22,027	8,701	39.5	1.1587	20.1
Northern Neck	13,373	37.8	1,843	789	42.8	11,530	4,263	37.0	.8636	13.8
Middle Peninsula	17,430	35.7	2,847	911	32.0	14,583	5,318	36.5	1.1397	16.3
Crater	53,732	41.3	10,838	4,280	39.5	42,894	17,920	41.8	1.0580	20.2
Southeastern Virginia	253,957	38.5	53,773	15,405	28.7	200,184	82,364	41.1	1.4360	21.1
Peninsula	106,353	40.7	23,599	7,085	30.0	82,754	36,230	43.8	1.4584	22.2
Accomack-Northampton	16,638	42.7	2.364	1,102	46.6	14,274	4,747	33.3	.7134	14.2
State	1,654,442	42.1	321,986	108,858	33.8	1,332,456	588,346	44.2	1.3061	19.5

TABLE 11. TRUE LABOR FORCE PARTICIPATION RATES, VIRGINIA, BY PLANNING DISTRICTS: 1970

Area	Total Population Aged 16+ (1)	Number In Military Service (2)	Number In College (3)	Number Aged 65 and Over (4)	One-half of Women With Children Under Six (5)	Potential Labor Force Members (1-[2+3+4+5]) (6)	Civilian Labor Force (7)	True Labor Force Participation Rate [7÷6] (8)
Lenowisco	59,758	43	783	9,843	2,797	46,292	24,975	53.95
Cumberland Plateau	75,311	26	1,416	9,225	3,979	60,665	32,527	53.62
Mount Rogers	114,420	51	2,908	17,643	5,239	88,579	61,417	69.34
New River Valley	83,948	100	12,477	9,483	4,066	57,822	45,535	78.75
Fifth	165,331	156	5,078	24,836	7,646	127,615	95,737	75.02
Central Shenandoah	133,743	149	8,826	18,219	6,082	100,467	77,875	77.51
Lord Fairfax	75,366	49	1,123	11,724	3,516	58,954	44,231	75.03
Northern Virginia	627,003	49,110	26,797	42,615	35,044	473,437	367,073	77.53
Rappahannock-Rapidan	49,218	701	276	8,025	2,361	37,855	28,005	73.98
Thomas Jefferson	81,987	192	8,506	11,328	3,804	58,157	46,124	79.31
Central Virginia	116,655	211	4,595	17,015	5,419	89,415	68,309	76.40
West Piedmont	150,665	39	3,982	19,134	7,474	120,036	92,680	77.21
Southside	56,151	15	701	8,352	2,550	44,533	30,909	69.41
Piedmont	52,910	200	2,347	9,186	2,315	38,862	27,985	72.01
Richmond Regional	385,627	972	20,610	47,707	18,306	298,032	235,144	78.90
Radco	53,220	2,510	2,690	6,477	2,768	38,775	28,558	73.65
Northern Neck	25,588	30	80	5,235	922	19,321	13,284	68.75
Middle Peninsula	33,694	77	418	6,361	1,424	25,414	18,048	71.02
Crater	111,257	11,887	2,060	12,558	5,419	79,333	55,493	69.95
Southeastern Virginia	529,684	82,846	15,381	49,049	26,887	355,521	246,337	69.29
Peninsula	217,049	26,045	11,424	16,928	11,800	150,849	109,350	72.49
Accomack-Northampton	30,819	210	170	6,549	1,182	22,708	17,144	75.50
State	3,229,401	175,629	132,659	367,492	160,993	2,392,628	1,766,740	73.84

FIGURE 3. RATE OF UNEMPLOYMENT AMONG THE CIVILIAN LABOR FORCE, VIRGINIA PLANNING DISTRICTS: 1970



aged 16 and over were unemployed as of April 1, 1970. As has been the case in recent years, the rate of unemployment was significantly higher among females (4.0%) than among males (2.3%). Part of the reason for this difference may have been the fact that females tend to move in and out of the labor force more frequently than males. Consequently, there were relatively more females newly entering the labor market and still in search of employment.

Areal differentials show that some portions of the State experienced much higher unemployment than others. In 1970 the Accomack-Northampton Planning District (no. 22) had by far the highest rate of unemployment in the state, 8.4%. This was primarily due to the very high rate of unemployment among females in this area, 13.7%. This rate was nearly twice as high as the next greatest incidence of female unemployment, 7.1% in the Northern Neck Planning District (no. 17). Even so, the rate of unemployment among males in Planning District 22, 4.7% was second only to the rate observed among males in Planning District 17 (5.2%). As might be anticipated from this discussion, Planning District 17 had the second highest incidence of unemployment in 1970, 6.0%. Unemployment also was relatively high in the four planning districts in the southwestern portion of the State (Districts 1, 2, 3, and 4, with observed rates of 4.5%, 4.4%, 4.1% and 4.0%), in the Southside and Piedmont areas (Districts 13 and 14, with 3.9 and 3.7%), and in the Hampton Roads area (Districts 20 and 21 with 3.9 and 3.6%). These data are summarized in Table 9 and Figure 3.

Chapter V.

Occupational and Industrial Composition of the Labor Force

The occupational composition states what sort of work the individual does, while the industrial composition shows what sort of product or service is produced by firms employing members of the labor force.

These variables tend to be extremely important for social science analysis. As Alba Edwards noted in 1940: "More than anything else, perhaps, a man's occupation determines his cause and his contribution in life. . . . Indeed, there is no other single characteristic that tells so much about a man and his status--social, intellectual, and economic--as does his occupation."* This is principally true due to the high correlation between income and occupational status.

A. Occupational Composition

The 1970 Census of Population furnished detailed information regarding the occupational composition of the labor force. To facilitate this analysis, the large number of occupational categories was collapsed into four groups: white collar, blue collar, agriculture, and service. A complete listing of the component occupations of these four groups is provided in Table 12. This table also shows the number of Virginians employed in these groups as of April 1, 1970.

For the State 48.9% of all employed Virginians over the age of fifteen were engaged in white collar occupation in 1970. As expected, the percentage was considerably higher among females (61.2%) than among males (41.1%).

Data on the occupational composition of an area's labor force tell a great deal about the economy of an area. An area specializing in trade and services tends to have a high proportion of white collar workers, an area specializing in manufacturing tends to have a high proportion of blue collar workers, and an area specializing in agriculture tends to have a high proportion of agricultural workers.

The data presented in Table 13 show that white collar employment was noticeably high in metropolitan areas, particularly in the Northern Virginia, Richmond, and Newport News-Hampton areas where it accounted for more than half of total employment. In two other planning districts essentially metropolitan in character (Fifth and Southeastern Virginia), it accounted for nearly half of the total. This was to be expected since metropolitan areas almost always serve as trade and financial centers. The only nonmetropolitan area where the proportion of white collar employment was large was the Thomas Jefferson Planning District (no. 10). Since the city of Charlottesville is the center of a relatively large trading area and is the location of a large university, this result was not especially surprising.

Blue collar employment accounted for more than half of all employment in four planning districts (Lenowisco, Cumberland Plateau, Mount Rogers, and West Piedmont) and was the largest single group in all districts except the six mentioned in the previous paragraph. Areas with particularly heavy concentrations of blue collar employment were typified by a high concentration of manufacturing (for example, Planning District 12 comprising the Danville-Martinsville area) or extractive industries, particularly mining (notably Planning Districts 1, 2, and 3 in Southwest Virginia).

Virginia, like most of the rest of the United States, has seen a considerable decline in the number of farmers and farm workers over the past several decades. In 1970 only 46,167 persons, or 2.7% of the employed labor force over 15 years of age was engaged in agricultural occupations. The extent of the decline in agricultural employ-

*Alba M. Edwards, "Preface" to Comparative Occupational Statistics for the United States: 1870 to 1940. (Washington: 1940), p. xi, quoted in Donald J. Bogue, Principles of Demography (New York: 1969), p. 252.

TABLE 12. DETAILED COMPOSITION OF THE OCCUPATIONAL DISTRIBUTION OF VIRGINIA'S LABOR FORCE: 1970

Category	Employment in 1970 (Persons 16 Years of Age and Over)
White Collar	839,597
Professional	274,778
Engineers	29,754
Physicians, Dentists, and other Practitioners	10,072
Other Health Workers	25,366
Teachers (Elementary and Secondary)	57,417
Technicians (Non-Health)	25,602
Other Professionals	126,567
Managers and Administrators (Nonfarm)	146,148
Salaried	123,802
Manufacturing	13,794
Retail Trade	27,925
Other Industries	82,083
Self-Employed	22,346
Retail Trade	12,346
Other Industries	10,000
Sales Workers	111,564
Manufacturing and Wholesale Trade	21,433
Retail Trade	65,911
Other Industries	24,220
Clerical and Kindred Workers	307,107
Bookkeepers	29,904
Secretaries, Stenographers, Typists	98,332
Other Clerical Workers	178,871
Blue Collar	621,245
Craftsmen, Foremen, and Kindred Workers	244,240
Automobile Mechanics	20,218
Other Mechanics	35,538
Machinists	7,907
Other Metal Craftsmen	10,714
Carpenters	23,150
Construction Craftsmen, except Carpenters	53,200
Other Craftsmen	93,513
Operatives, except Transport	224,758
Durable Goods Manufacturing	58,261
Nondurable Goods Manufacturing	109,069
Nonmanufacturing Industries	57,428
Transport Equipment Operatives	69,586
Truck Drivers	32,076
Other Transport Equipment Operatives	37,510
Laborers, except Farm	82,661
Construction Laborers	18,414
Freight, Stock, and Material Handlers	27,415
Other Non-farm Laborers	36,832
Agriculture	46,167
Farmers and Farm Managers	25,362
Farm Laborers and Farm Foremen	20,805
Service	207,241
Service Workers, except Private Household	169,049
Cleaning Service Workers	37,307
Food Service Workers	51,807
Health Service Workers	23,596
Personal Service Workers	24,100
Protective Service Workers	20,738
Private Household Workers	38,192
Total	1,714,250

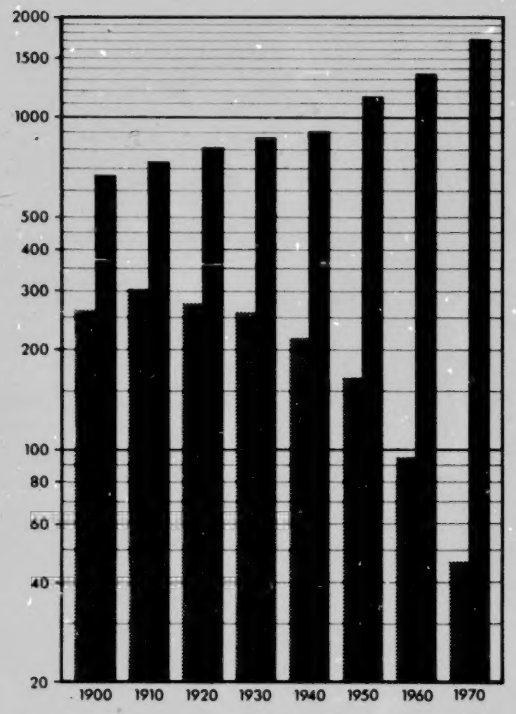
TABLE 13. OCCUPATIONAL DISTRIBUTION OF EMPLOYED CIVILIAN LABOR FORCE, BY SEX, VIRGINIA, BY PLANNING DISTRICTS: 1970

Area	Percent White Collar	Percent Blue Collar	Percent Agriculture	Percent Service
Lenowisco				
Male	23.9	62.8	8.0	5.3
Female	51.5	20.3	1.5	26.7
Total	31.7	50.6	6.1	11.5
Cumberland Plateau				
Male	21.1	69.4	6.0	3.5
Female	53.8	27.0	0.4	18.9
Total	30.0	57.8	4.5	7.7
Mount Rogers				
Male	25.5	59.3	9.2	6.1
Female	38.8	43.3	1.0	16.8
Total	30.4	53.2	6.2	10.2
New River Valley				
Male	32.8	54.7	4.4	8.2
Female	44.5	34.3	0.6	20.8
Total	37.0	47.1	3.0	12.8
Fifth				
Male	40.1	51.5	1.4	7.0
Female	59.9	19.3	0.2	20.6
Total	47.6	39.3	1.0	12.1
Central Shenandoah				
Male	32.2	52.6	7.9	7.4
Female	46.6	29.6	0.8	22.9
Total	37.8	43.8	5.1	13.4
Lord Fairfax				
Male	29.0	58.1	7.4	5.6
Female	44.8	33.1	1.0	21.2
Total	34.9	48.8	5.0	11.3
Northern Virginia				
Male	65.4	26.8	0.9	6.9
Female	82.5	4.4	0.1	13.1
Total	72.6	17.4	0.6	9.5
Rappahannock-Rapidan				
Male	26.7	51.4	15.5	6.3
Female	46.0	21.8	1.7	30.6
Total	33.5	41.2	10.7	14.7
Thomas Jefferson				
Male	39.3	46.5	5.9	8.3
Female	58.7	19.8	0.6	21.0
Total	47.0	36.0	3.8	13.3
Central Virginia				
Male	34.0	55.2	4.7	6.2
Female	48.3	29.3	0.5	21.9
Total	39.6	45.0	3.0	12.4
West Piedmont				
Male	24.6	62.9	7.1	5.4
Female	38.1	45.5	0.7	15.7
Total	29.8	56.1	4.6	9.4
Southside				
Male	25.0	55.0	16.2	3.9
Female	39.0	38.4	1.8	20.9
Total	30.2	48.8	10.8	10.3
Piedmont				
Male	22.4	56.6	16.4	4.7
Female	40.2	34.7	1.6	23.6
Total	29.1	48.4	10.8	11.8
Richmond Regional				
Male	45.8	45.3	1.3	7.6
Female	65.7	14.3	0.3	19.7
Total	54.0	32.6	0.9	12.6

TABLE 13. OCCUPATIONAL DISTRIBUTION OF EMPLOYED CIVILIAN LABOR FORCE, BY SEX, VIRGINIA, BY PLANNING DISTRICTS: 1970
(Continued)

Area	Percent White Collar	Percent Blue Collar	Percent Agriculture	Percent Service
Radco				
Male	32.8	56.7	3.5	7.0
Female	55.6	18.9	0.5	25.0
Total	41.3	42.9	2.4	13.5
Northern Neck				
Male	26.5	57.3	10.7	5.5
Female	42.9	34.5	1.6	21.0
Total	32.6	48.7	7.3	11.3
Middle Peninsula				
Male	28.1	60.8	6.0	5.1
Female	51.5	17.7	2.6	28.2
Total	36.0	46.2	4.9	12.9
Crater				
Male	31.4	54.8	5.7	8.2
Female	50.7	21.4	0.4	27.5
Total	38.9	41.7	3.6	15.8
Southeastern Virginia				
Male	38.3	51.1	2.3	8.3
Female	63.6	11.7	0.4	24.4
Total	48.1	35.8	1.5	14.6
Peninsula				
Male	42.6	47.6	0.7	9.1
Female	65.1	10.6	0.1	24.3
Total	51.4	33.1	0.5	15.0
Accomack-Northampton				
Male	26.0	51.8	15.9	6.3
Female	36.9	32.6	8.3	22.2
Total	30.3	44.3	13.0	12.5
State				
Male	41.1	47.7	4.1	7.1
Female	61.2	18.4	0.5	20.0
Total	48.9	36.3	2.7	12.1

Figure 4. Virginia's Employed Labor Force and Agricultural Labor Force: 1900-1970



ment during the twentieth century is shown in Figure 4.

Throughout the present century the share of the labor force in agriculture has been steadily diminishing. Agricultural employment reached a peak in 1910 when about 305,000 of Virginia's 739,000 employed persons (aged 16 and over) were engaged in agricultural pursuits. In 80 years, Virginia's labor force went from nearly half agricultural (43.7% in 1900) to the minimal proportion of 2.7% recorded in 1970. While the number of employed persons aged 16 and over increased by 183% between 1900 and 1970, the number of persons employed in agriculture declined by 83%.

In Virginia, agriculture accounted for more than 10% of the labor force in only four planning districts: Rappahannock-Rapidan (10.7%), West Piedmont (10.8%), Piedmont (10.8%), and Accomack-Northampton (13.0%). In most other nonmetropolitan districts, it accounted for about 4 to 6% of the employed labor force, while in metropolitan districts it was generally around 1% or less. In brief, even in rural areas of the State, it appears that the importance of agriculture as a source of employment is diminishing.

The final occupational category of Virginia's labor force in this analysis is service workers. This category accounted for 12.1% of the State's labor force and does not vary to any considerable extent across the state. A minimum share of 7.7% was recorded in the Cumberland Plateau district, and a maximum of 15.8% was found in Crater district. With the exception of workers in private households, this category is likely to experience continued growth as the economy of the State provides more and more discretionary time and income to Virginia workers.

B. Industrial Composition

The industrial classification of the labor force is predicated in terms of the product or service provided by industries employing the Virginia labor force. The Standard Industrial Classification Code (SICC)* uses ten broad groups to classify industry: agriculture, forestry, and fisheries; mining; contract construction; manufacturing; transportation, communication, electric, gas, and sanitary services; wholesale and retail trade; finance, insurance, and real estate; services; government; and nonclassifiable. In this analysis manufacturing was divided into durable and nondurable goods, and the nonclassifiable category was eliminated. With these two exceptions, the SICC categories were followed. A complete list of these categories and the number of Virginians employed in each industry in 1970 is given in Table 14.

As the table indicates, the bulk of Virginia employment in 1970 was in services (25.4%), manufacturing (22.4%), and trade (18.0%). Other significant concentrations of employment were in public administration (11.4%), construction (7.4%), transportation and communications (6.8%), and financial services (4.4%). As expected, relatively few persons were employed in

*Executive Office of the President, Bureau of the Budget, Standard Industrial Classification Manual (Washington, 1967), pp. v-vii.

TABLE 14. DETAILED COMPOSITION OF THE INDUSTRIAL DISTRIBUTION OF VIRGINIA'S LABOR FORCE: 1970

Category	Employment in 1970 (Persons Aged 16 and over)
1. Agriculture, Forestry and Fisheries	57,262
2. Mining	17,067
3. Construction	126,803
4. Durable Goods Manufacturing	169,044
a. Furniture and Lumber and Wood Products	44,038
b. Primary Metal Industries	8,974
c. Fabricated Metal Industries	16,541
d. Machinery, Except Electrical	11,521
e. Electrical Machinery, Equipment, Supplies	26,121
f. Motor Vehicles and Other Transportation Equipment	38,002
g. Other Durable Goods	23,847
5. Nondurable Goods Manufacturing	215,178
a. Food and Kindred Products	27,157
b. Textile Mill and Other Fabricated Textile Products	80,789
c. Printing, Publishing, and Allied Industries	20,921
d. Chemical and Allied Products	34,418
e. Other Nondurable Goods	51,893
6. Transportation, Communication, Electric, Gas and Sanitary Services	115,948
a. Railroads and Railway Express Service	19,059
b. Trucking Service and Warehousing	22,189
c. Other Transportation	26,364
d. Communications	23,935
e. Utilities and Sanitary Services	24,401
7. Wholesale and Retail Trade	307,797
a. Wholesale Trade	56,768
b. Food, Bakery, and Dairy Stores	38,596
c. Eating and Drinking Places	39,112
d. General Merchandise Retailing	46,455
e. Motor Vehicle Retailing and Service Stations	39,849
f. Other Retail Trade	87,017
8. Finance, Insurance, and Real Estate	75,420
a. Banking and Credit Agencies	27,829
b. Insurance, Real Estate, and Other Finance	47,591
9. Services	434,970
a. Business Services	25,386
b. Repair Services	19,154
c. Private Households	37,722
d. Other Personal Services	53,941
e. Entertainment and Recreation Services	11,064
f. Hospitals	54,438
g. Other Health Services	29,078
h. Elementary and Secondary Schools and Colleges	127,497
i. Other Education and Kindred Services	8,004
j. Welfare, Religious, and Non-profit Membership Organizations	26,642
k. Legal, Engineering, and Miscellaneous Professional Services	42,044
10. Public Administration	194,761
Total	1,714,250

Figure 5A. Industrial Composition of Virginia's Employed Labor Force: 1960

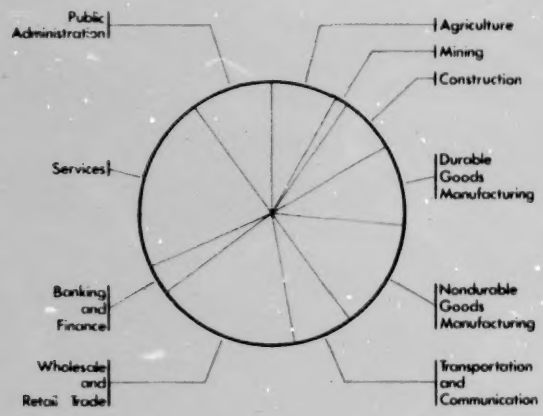
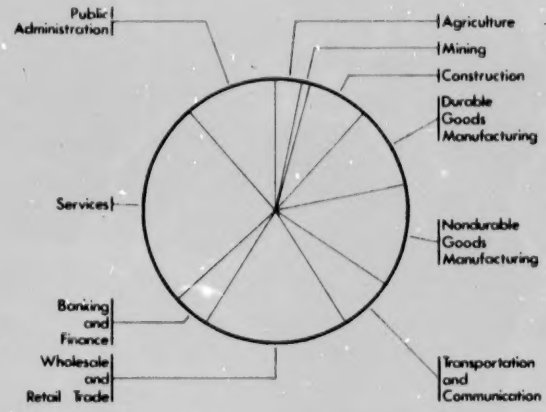


Figure 5B. Industrial Composition of Virginia's Employed Labor Force: 1970



agriculture, forestry, and fisheries (3.3%) or in mining (1.0%).

Comparing this data with comparable data for 1960 (see Figures 5A and 5B), the share of persons employed in services (21.7% in 1960), trade (17.7%), public administration (10.1%), construction (7.0%), and financial services (3.6%) rose during the 1960-1970 decade, while that of agriculture (8.1%), mining (1.5%), manufacturing (23.2%), and transportation and communications (7.2%) diminished.

Overall, employment in Virginia rose by 27.9% in this period. Relatively greater gains occurred in financial services (60.0%), services (54.2%), public administration (49.2%), construction (39.1%), durable goods manufacturing (36.2%), and wholesale and retail trade (34.3%). Relatively smaller gains occurred in transportation and communications (24.4%) and nondurable goods manufacturing (22.4%), while absolute declines were experienced in the agricultural (45.3% decrease) and mining (11.5% decrease) sectors.

Using the ten categories outlined previously, the 1970 industrial composition of the labor force in the twenty-two planning districts is given in Table 15. The data show considerable variability among planning districts in the industrial composition of the labor force. Agriculture, for example, employed almost 18% of the 1970 labor force in the Accomack-Northampton Planning District (no. 22), and more than 10% in the Rappahannock-Rapidan, Southside, Piedmont, and Northern Neck Planning Districts (no. 9, 13, 14, and 17 respectively). On the other hand, in most urban areas of the state between 1 and 2% of the labor force was employed in agricultural industries.

The concentration of mining industries within a couple of planning districts was even more pronounced. Mining employed over 29% of the labor force in the Cumberland Plateau Planning District (no. 2) and almost 15% in Lenowisco Planning District (no. 1). With the exception of Mount Rogers Planning District (no. 3) (1.11%), mining employed less than 1% of the labor force in all other planning districts in 1970.

Few other industries show such pronounced concentration, although, as expected, metropolitan areas tended to have more workers employed in banking and financial services and other services and fewer workers employed in manufacturing than did nonmetropolitan areas.

Another area of pronounced concentration was public administration. Employment in this sector was primarily located in the Northern Virginia Planning District (no. 8), where it accounted for over 28% of employment and, to a lesser extent in the Southeastern Virginia and Peninsula Planning Districts (no. 20 and 21), where it accounted for 12.02 and 14.18% of employment, respectively. All told, these three areas, with 43% of all employment in the State, accounted for nearly three-fourths (74.24%) of employment in the public administration sector. Somewhat surprisingly, Planning District 15, including the state capitol of Richmond, had only 7.48% of its labor force

TABLE 15. INDUSTRIAL COMPOSITION OF VIRGINIA'S LABOR FORCE, BY PLANNING DISTRICT: 1970

Area	Agriculture, Forestry, and Fisheries	Mining	Construction	Durable Goods Manufacturing	Nondurable Goods Manufacturing	Transportation, Communication, Utilities	Wholesale and Retail Trade	Banking and Financial Services	Services	Public Administration	Total
Lenowisco											
Percent of Labor Force	6.70	14.47	9.43	4.07	14.00	5.87	18.46	1.60	22.17	3.23	100.00
Cumberland Plateau											
Percent of Labor Force	4.86	29.06	6.82	6.38	7.52	6.55	16.99	1.79	17.28	2.75	100.00
Mount Rogers											
Percent of Labor Force	6.64	1.11	8.29	16.52	24.33	4.41	15.39	1.92	18.65	2.75	100.00
New River Valley											
Percent of Labor Force	3.42	0.39	6.93	13.57	24.98	4.32	13.52	2.09	27.79	2.99	100.00
Fifth											
Percent of Labor Force	1.40	0.33	6.47	10.48	13.30	13.46	21.53	4.45	24.84	3.74	100.00
Central Shenandoah											
Percent of Labor Force	6.20	0.36	7.51	12.33	21.33	4.99	16.10	2.17	26.51	2.49	100.00
Lord Fairfax											
Percent of Labor Force	6.02	0.48	10.84	8.78	21.95	6.44	19.56	2.67	19.54	3.71	100.00
Northern Virginia											
Percent of Labor Force	0.96	0.14	6.27	3.49	2.94	7.06	16.24	6.28	28.45	28.17	100.00
Rappahannock-Rapidan											
Percent of Labor Force	12.94	0.76	14.43	10.18	8.25	5.41	15.54	3.41	23.27	5.83	100.00
Thomas Jefferson											
Percent of Labor Force	4.78	0.92	8.93	12.00	9.62	5.72	15.20	4.66	34.22	3.96	100.00
Central Virginia											
Percent of Labor Force	3.39	0.33	6.92	20.99	18.77	5.15	15.33	3.47	22.91	2.74	100.00
West Piedmont											
Percent of Labor Force	4.83	0.13	6.23	17.75	31.92	4.23	13.63	2.38	16.68	2.22	100.00
Southside											
Percent of Labor Force	11.36	0.62	8.16	12.03	25.29	4.08	15.09	1.78	18.87	2.71	100.00
Piedmont											
Percent of Labor Force	11.81	0.89	8.18	13.34	16.30	6.20	14.70	1.76	22.46	4.36	100.00
Richmond Regional											
Percent of Labor Force	1.27	0.22	7.29	6.12	15.04	7.88	20.50	7.21	26.98	7.48	100.00
Radco											
Percent of Labor Force	3.04	0.38	12.17	6.35	11.16	5.43	18.70	2.69	25.25	14.84	100.00
Northern Neck											
Percent of Labor Force	13.00	0.17	9.60	7.64	14.36	4.87	19.57	3.00	21.89	5.90	100.00
Middle Peninsula											
Percent of Labor Force	8.64	0.19	9.33	12.50	10.49	4.62	18.40	2.80	23.32	9.71	100.00
Crater											
Percent of Labor Force	4.05	0.31	6.56	6.78	24.37	5.06	17.33	2.39	24.34	8.80	100.00
Southeastern Virginia											
Percent of Labor Force	2.06	0.08	7.82	11.03	6.15	7.85	22.17	4.66	26.15	12.02	100.00
Peninsula											
Percent of Labor Force	1.01	0.04	6.25	19.36	3.96	5.79	18.05	3.45	27.92	14.18	100.00
Accomack-Northampton											
Percent of Labor Force	17.95	0.12	7.18	3.01	17.79	5.70	20.22	1.84	20.32	5.86	100.00
State											
Percent of Labor Force	3.34	1.00	7.40	9.86	12.55	6.76	17.96	4.40	25.37	11.36	100.00

employed in this sector. (This is due to the relatively low number of federal employees in the area.)

The concentration pattern of employment by industry is contained in the data in Table 16. This table shows a summary of the rank order of each industry in each county. As is seen in the data, highly concentrated industries, such as mining and public administration, were highly ranked in a few counties and ranked near the bottom in many of the rest. Industries that are not highly concentrated tended to have a more or less constant rank in the majority of planning districts. This pattern held in the construction, transportation and communication, wholesale and retail trade, banking, and service sectors.

Another and perhaps more useful way of determining the regional concentration of the labor force in certain industries is through the use of a location quotient. The location quotient for any industry, i, in any planning district, j, ($L_{i,j}$) is the ratio of employment in that sector and in that planning district ($E_{i,j}$) (considered as a percentage of total employment in that planning district (E_j)) to employment in that sector for the entire state ($E_{i,v}$) (considered as a percentage of total employment in the state (E_v)). Mathematically, we may define this as follows:*

$$L_{i,j} = \frac{E_{i,j}/E_j}{E_{i,v}/E_v}$$

Thus, if 10% of the state's labor force is employed in sector i and 15% of the labor force in planning district j is employed in this sector, $L_{i,j}$ would equal 1.5. Location quotients for all industrial groups in all planning districts are given in Table 17.

In evaluating the results of the location quotient analysis, it is important to realize that the data on employment by industrial groups are tabulated on a residence basis; that is, the individual worker is counted in the area where he lives rather than the area where he works. Due to the relatively high level of inter-area commuting (46.7% of Virginia's labor force worked outside the city or county of residence in 1970), the computation of location quotients to determine industrial concentration on a city-county level would be essentially meaningless. However, by grouping cities and counties into planning districts, much of the effect of commuting is removed.

The location quotients given in Table 17 are functions not only of industrial concentration, but of size differentials among planning districts as well. For example, in agriculture, 16 of 22 planning districts had location quotients in excess of 1.0. This means relatively more persons were employed in the agricultural sphere than in the State as a whole. However, five of the six remaining districts are the five largest and most metropolitan districts in the state. As would be expected, agriculture was not a major source of employment. The remaining district (Planning District 16, centering on Fredericksburg) had a quotient of .91. Since this area is located between the suburban portions of two large metropolitan areas (Washington to the north and Richmond to the south), it may be starting to take on the suburban characteristics of its neighbors, as the process of urbanization continues. It is, for example, not uncommon to see subdivisions in Fredericksburg or Stafford County advertised in the real estate pages of Washington newspapers.

Despite the relatively high number of districts with agricultural quotients in excess of unity, the quotients were especially high (greater than 2.0) in seven districts: Lenswico Planning District (no. 1) in Southwest Virginia; the Rappahannock-Rapidan Planning District (no. 9), immediately southwest of the Washington metropolitan area; the Piedmont and Southside districts (no. 13 and 14); the Northern Neck and Middle Peninsula districts (no. 17 and 18); and the Accomack-Northampton district (no. 22).

The most concentrated industry was clearly mining, with extremely high location quotients found in the Lenowisco and Cumberland Plateau Planning Districts (14.47 and 29.06, respectively), a quotient slightly over unity (1.11) in the Mount Rogers Planning District, and quotients less than unity in all other districts. Substantial concentration was also found in the banking sector (five of twenty-two districts with quotients over unity), transportation (four districts with quotients over

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*Alternatively, the location quotient may be viewed as any district's share of total state employment in a given sector divided by that district's share of total employment in the state. Mathematically, this would simply be:

$$L_{i,j} = \frac{E_{i,j}/E_{i,v}}{E_j/E_v}$$

TABLE 16. RANK ORDER DISTRIBUTION OF EMPLOYMENT BY INDUSTRIAL CATEGORY, VIRGINIA CITIES AND COUNTIES: 1970

	Agriculture	Mining	Construction	Durable Goods Manufacturing	Nondurable Goods Manufacturing	Transportation, Communication, Utilities	Wholesale and Retail Trade	Banking and Financial Services	Services	Public Administration	Total
1	1	4	0	7	38	0	11	0	71	2	134
2	6	0	1	19	16	1	44	0	41	6	134
3	9	2	8	19	28	5	38	0	18	7	134
4	11	1	27	27	14	7	30	3	3	11	134
5	17	0	49½	13	11	24	8	2	½	9	134
6	22½	0	38½	16	5	30½	3	7	½	11	134
7	9½	0	5	13	12	46½	0	20½	0	27½	134
8	9	3	5	17	8	18	0	31½	0	42½	134
9	43	6	0	3	2	2	0	60	0	18	134
10	6	118	0	0	0	0	0	10	0	0	134
Total	134	134	134	134	134	134	134	134	134	134	1,340

Note: Each cell represents the number of cities and counties in which employment in a specific sector ranks in a specific order among all employing industries. For example, mining is the leading sector in four jurisdictions, is third in two, fourth in one, eighth in three, ninth in six, and tenth in 118.

TABLE 17. LOCATION QUOTIENTS FOR EMPLOYMENT BY INDUSTRIAL CATEGORY, VIRGINIA, BY PLANNING DISTRICT: 1970

Area	Agriculture	Mining	Construction	Durable Goods Manufacturing	Nondurable Goods Manufacturing	Transportation, Communication, Utilities	Wholesale and Retail Trade	Banking and Financial Services	Services	Public Administration
Lenowisco	2.0061	14.4700	1.2743	.4128	1.1155	.8683	1.0278	.3636	.8739	.2843
Cumberland Plateau	1.4540	29.0600	.9216	.6471	.5992	.9689	.9460	.4068	.6811	.2421
Mount Rogers	1.9877	1.1100	1.1203	1.6755	1.9386	.6524	.8569	.4364	.7351	.2421
New River Valley	1.0225	.3900	.9365	1.3763	1.9904	.6391	.7528	.4750	1.0954	.2632
Fifth	.4191	.3300	.8743	1.0629	1.0598	1.9911	1.1988	1.0114	.9791	.3292
Central Shenandoah	1.8575	.3600	1.0149	1.2505	1.6996	.7382	.8964	.4932	1.0449	.2192
Lord Fairfax	1.8018	.4800	1.4649	.8905	1.7490	.9527	1.0891	.6068	.7702	.3266
Northern Virginia	.2875	.1400	.8473	.3540	.2343	1.0444	.9042	1.4273	1.1214	2.4798
Rappahannock-Rapidan	3.8727	.7600	1.9500	1.0325	.6574	.8003	.8653	.7750	.9172	.5132
Thomas Jefferson	1.4298	.9200	1.2068	1.2170	.7665	.8462	.8463	1.0591	1.3488	.3486
Central Virginia	1.0151	.3300	.9351	2.1288	1.4956	.7618	.8536	.7886	.9030	.2412
West Piedmont	1.4474	.1300	.8419	1.8002	2.5434	.6257	.7589	.5409	.6575	.1954
Southside	3.4009	.6200	1.1027	1.2201	2.0151	.6036	.8402	.4045	.7438	.3286
Piedmont	3.5342	.8900	1.1054	1.3529	1.2988	.9172	.8185	.4000	.8853	.3838
Richmond Regional	.3815	.2200	.9851	.6207	1.1984	1.1657	1.1414	1.6386	1.0635	.6585
Radco	.9102	.3800	1.6446	.6440	.8892	.8033	1.0412	.6114	.9953	1.3063
Northern Neck	3.8913	.1700	1.2973	.7748	1.1442	.7204	1.0896	.6818	.8628	.5194
Middle Peninsula	2.5857	.1900	1.2608	1.2677	.8359	.6834	1.0245	.6364	.9192	.8548
Crater	1.2126	.3100	.8865	.6876	1.9418	.7485	.9649	.5432	.9594	.7747
Southeastern Virginia	.6158	.0800	1.0568	1.1187	.4900	1.1612	1.2344	1.0591	1.0307	1.0581
Peninsula	.3018	.0400	.8446	1.9635	.3155	.8565	1.0050	.7841	1.1005	1.2482
Accomack-Northampton	5.3739	.1200	.9703	.3053	1.4175	.8432	1.1258	.4182	.8009	.5158

TABLE 18. LEADING AREAS OF RELATIVE CONCENTRATION OF EMPLOYMENT, VIRGINIA PLANNING DISTRICTS: 1970

(Location quotients in parentheses)

District	1st Sector	2nd Sector	3rd Sector	4th Sector
Lenowisco (P.D. 1)	Mining (14.47)	Agriculture (2.01)	Construction (1.27)	Nondurable goods manufacturing (1.16)
Cumberland Plateau (P.D. 2)	Mining (29.06)	Agriculture (1.45)	Transportation (.97)	Trade (.95)
Mount Rogers (P.D. 3)	Agriculture (1.99)	Nondurable goods manufacturing (1.94)	Durable goods manufacturing (1.68)	Construction (1.12)
New River Valley (P.D. 4)	Nondurable goods manufacturing (1.99)	Durable goods manufacturing (1.38)	Services (1.10)	Agriculture (1.02)
Fifth (P.D. 5)	Transportation (1.99)	Trade (1.20)	Durable goods manufacturing (1.06)	Nondurable goods manufacturing (1.06)
Central Shenandoah (P.D. 6)	Agriculture (1.86)	Nondurable goods manufacturing (1.70)	Durable goods manufacturing (1.25)	Services (1.04)
Lord Fairfax (P.D. 7)	Agriculture (1.80)	Nondurable goods manufacturing (1.75)	Construction (1.46)	Trade (1.09)
Northern Virginia (P.D. 8)	Public administration (2.48)	Banking (1.43)	Services (1.12)	Transportation (1.04)
Rappahannock-Rapidan (P.D. 9)	Agriculture (3.87)	Construction (1.95)	Durable goods manufacturing (1.03)	Services (.92)
Thomas Jefferson (P.D. 10)	Agriculture (1.43)	Services (1.35)	Durable goods manufacturing (1.22)	Construction (1.21)
Central Virginia (P.D. 11)	Durable goods manufacturing (2.13)	Nondurable goods manufacturing (1.50)	Agriculture (1.02)	Construction (.94)
West Piedmont (P.D. 12)	Nondurable goods manufacturing (2.54)	Durable goods manufacturing (1.80)	Agriculture (1.45)	Construction (.84)
Southside (P.D. 13)	Agriculture (3.40)	Nondurable goods manufacturing (2.02)	Durable goods manufacturing (1.22)	Construction (1.10)
Piedmont (P.D. 14)	Agriculture (3.53)	Durable goods manufacturing (1.35)	Nondurable goods manufacturing (1.30)	Construction (1.11)
Richmond Regional (P.D. 15)	Banking (1.64)	Nondurable goods manufacturing (1.20)	Transportation (1.17)	Trade (1.14)
Radco (P.D. 16)	Construction (1.64)	Public administration (1.31)	Trade (1.04)	Service (1.00)
Northern Neck (P.D. 17)	Agriculture (3.89)	Construction (1.30)	Nondurable goods manufacturing (1.14)	Trade (1.09)
Middle Peninsula (P.D. 18)	Agriculture (2.59)	Durable goods manufacturing (1.27)	Construction (1.26)	Trade (1.02)
Crater (P.D. 19)	Nondurable goods manufacturing (1.94)	Agriculture (1.21)	Trade (.96)	Services (.96)
Southeastern Virginia (P.D. 20)	Trade (1.23)	Transportation (1.16)	Durable goods manufacturing (1.12)	Banking (1.06)
Peninsula (P.D. 21)	Durable goods manufacturing (1.96)	Public administration (1.25)	Services (1.10)	Trade (1.01)
Accomack-Northampton (P.D. 22)	Agriculture (5.37)	Nondurable goods manufacturing (1.42)	Trade (1.13)	Construction (.97)

unity), and public administration (four districts with quotients over unity).

In order to give some indication of the differing industrial composition of Virginia planning districts, Table 18 shows the four most significant sectors (in terms of location coefficient) for each planning district. The purpose of this table is to show how different the concentration patterns of industry throughout the State are. For example, Northern Virginia, with its concentrations of public administration, banking and financial services, other services, and transportation is obviously quite different from areas with concentration in agriculture, manufacturing, and construction.

The data in Table 18 are also useful in evaluating those areas which are heavily dependent upon one or two industries for employment. The most obvious example is the Cumberland Plateau Planning District, which was characterized by an extraordinarily high location quotient for mining, a moderately high quotient for agriculture, and relatively low quotients (less than unity) for other industries.

Chapter VI.

Income

Three aspects of income are considered in this chapter: the mean level of family income, the incidence of poverty, and the distribution of income.

A. Mean Family Income

Mean family income is the arithmetic average of the reported level of income (in 1969) for all families in an area under study. Data for all 22 planning districts are presented in Table 19. The data show a substantial amount of variation, ranging from a low of $6,302 in extreme Southwest Virginia to a high of $15,347 in Northern Virginia. Once again, the latter area is most atypical of the balance of the State. The mean level of family income in Northern Virginia was nearly $4,000 higher than in the second-place district, the Richmond Regional Planning District (no. 15). These two districts and the Peninsula district (no. 21) were the only ones in the State with mean income above that recorded for the State as a whole.

As expected, the urbanized and metropolitan areas had somewhat higher levels of mean family income than did rural areas. In addition to the areas mentioned above, the areas around Roanoke (Planning District 5), Harrisonburg-Staunton-Waynesboro (Planning District 6), Charlottesville (Planning District 10), Lynchburg (Planning District 11), Fredericksburg (Planning District 16), Petersburg-Hopewell-Colonial Heights (Planning District 19), and Norfolk-Virginia Beach-Portsmouth (Planning District 20) all had mean family income levels of $9,000 or greater. Additionally, the Radford-Montgomery County area (Planning District 4) was close to this level ($8,904). Relatively low levels of income were found in the Southwestern (Planning Districts 1, 2, 3), Southside

FIGURE 6. MEAN FAMILY INCOME FOR PLANNING DISTRICTS: 1970

TABLE 19. MEAN FAMILY INCOME AND INCIDENCE OF POVERTY, VIRGINIA, BY PLANNING DISTRICT: 1970

Area	Number of Families	Mean Income	Number of Poor Families	Mean Income of Poor Families	Mean Income Deficit	Percent of Families in Poverty	Number of Poor Persons	Percent of Population in Poverty	Deficit/ Income Ratio of Poor Families	Mean Income as a Percent of State Total
Lenowisco Planning District 1	22,647	$ 6,302	6,743	$1,906	$1,478	29.77	28,655	33.85	.7754	.5963
Cumberland Plateau Planning District 2	28,637	7,020	7,356	2,106	1,515	25.69	32,717	29.08	.7194	.6643
Mount Rogers Planning District 3	42,299	7,398	7,572	2,006	1,316	17.90	32,579	20.44	.6560	.7000
New River Valley Planning District 4	28,763	8,904	3,577	1,972	1,247	12.44	16,037	13.97	.6324	.8425
Fifth Planning District 5	61,607	9,894	5,825	2,082	1,293	9.46	27,616	11.95	.6210	.9362
Central Shenandoah Planning District 6	46,916	9,116	5,400	2,093	1,297	11.51	25,622	13.75	.6197	.8626
Lord Fairfax Planning District 7	28,408	8,288	3,656	2,058	1,275	12.87	16,536	15.55	.6195	.7843
Northern Virginia Planning District 8	231,308	15,347	10,120	1,696	1,775	4.38	50,006	5.43	1.0466	1.4522
Rappahannock-Rapidan Planning District 9	18,192	8,773	3,412	2,197	1,484	18.76	16,480	22.82	.6755	.8301
Thomas Jefferson Planning District 10	28,032	9,518	4,496	2,131	1,459	16.04	23,884	20.73	.6847	.9006
Central Virginia Planning District 11	41,825	9,411	4,999	2,173	1,375	11.95	24,778	14.93	.6328	.8905
West Piedmont Planning District 12	56,556	8,531	8,034	2,203	1,368	14.21	38,645	17.66	.6210	.8072
Southside Planning District 13	20,710	7,179	5,057	2,193	1,495	24.42	25,230	30.56	.6817	.6793
Piedmont Planning District 14	18,395	7,418	4,493	2,151	1,522	24.43	22,121	29.01	.7076	.7019
Richmond Regional Planning District 15	139,318	11,362	13,154	2,126	1,544	9.44	68,504	12.51	.7262	1.0751
Radco Planning District 16	18,950	9,461	2,365	2,137	1,406	12.48	11,256	14.54	.6579	.8952
Northern Neck Planning District 17	9,704	7,390	2,399	2,078	1,497	24.72	11,540	31.88	.7204	.6993
Middle Peninsula Planning District 18	12,428	8,463	2,256	2,164	1,547	18.15	10,138	21.29	.7149	.8008
Crater Planning District 19	37,218	9,216	5,346	2,178	1,623	14.36	27,600	17.14	.7452	.8721
Southeastern Virginia Planning District 20	181,748	9,703	25,950	1,908	1,794	14.28	126,650	16.46	.9403	.9181
Peninsula Planning District 21	77,346	10,721	7,817	1,897	1,776	10.11	37,703	11.82	.9362	1.0145
Accomack-Northampton Planning District 22	11,249	6,386	3,044	1,888	1,596	27.06	14,680	33.79	.8453	.6043
Total	1,116,256	$10,568	143,005	$2,025	$1,548	12.30	690,615	14.86	.7644	1.0000

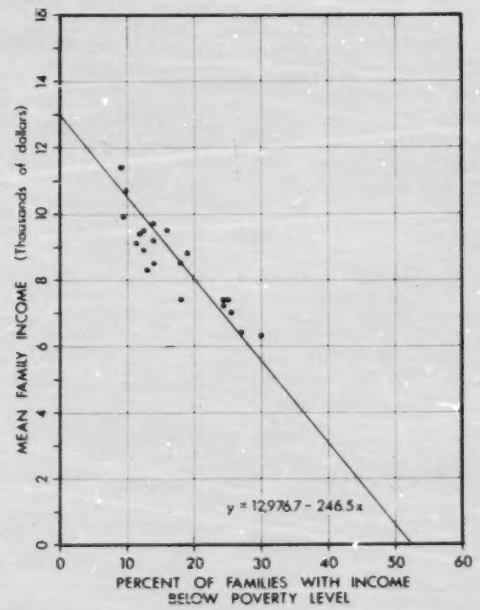
(Planning Districts 13 and 14), Upper Peninsula (Planning Districts 17 and 18) and Eastern Shore (Planning District 22) areas. The level of mean family income for all planning districts is shown in graphic form in Figure 6.

Level of mean income does not take into account areal differences in the cost of living. Thus, mean family income in Northern Virginia was $9,000 higher than in extreme Southwestern Virginia, but this does not necessarily mean that the purchasing power of Northern Virginia families exceeded that of Southwest Virginia families by this amount. Regretably, there are no comparable indices which show the relative cost of living in these two (or any other) areas.*

B. Incidence of Poverty

Data on the incidence of poverty correct this data deficiency to a limited extent. The incidence of poverty tells how many families received a level of income which was less than the appropriate criteria as developed by the Social Security Administration. The data on the incidence of poverty for females and individuals (also in Table 19) show that, in general, the lower the level of mean family income, the higher the percentage of families in poverty. As Figure 7 shows, the relationship between the two variables was quite high. The simple coefficient of correlation (a measure of the association of two variables) was a relatively high -.859. (The negative sign indicates that the variables tend to move in the opposite direction.) Consequently, districts with low levels of income tended to have the highest incidence of poverty among families and individuals. In six of the 22 planning districts (Lenowisco, Cumberland Plateau, Southside, Piedmont, Northern Neck, and Accomack-Northampton), about one-fourth of all families were classified as receiving a level of income below the poverty criterion.

Figure 7. Statistical Relationship Between Mean Family Income and Percent of Families with Income Below the Poverty Level



The data in Table 19 also show the mean income deficit of families below the poverty level of income. This figure represents the average amount that each poor family would require to move beyond the poverty level. The table also shows this number expressed as a percentage of the mean income of poverty families. The purpose of this ratio is to show the relative amount of increased income required, on the average, to remove all families from the poverty classification.

These two sets of data provide some interesting contrasts to the data on mean family income and incidence of poverty. The Northern Virginia area which had by far the highest mean family income and lowest incidence of poor families, also showed the lowest mean income for families below the poverty level ($1,696) and the highest ratio of mean deficit to mean family income for poor families (1.05). In other words, in order to raise all poor families in Northern Virginia above the poverty level, their average income would have to increase by more than 100% (from $1,696 to $3,471). Other relatively high income areas which would also require large increases in average income include both planning districts in the Tidewater area. These districts ranked third (Peninsula Planning District) and fifth (Southeastern Virginia Planning District) in terms of mean family income and third and second, respectively, in terms of the relative income increase required to remove all families from poverty (the ratios are .936 and .940, respectively).

*An exception to this is found in the comparative retail food prices for the Norfolk-Virginia Beach-Portsmouth, Richmond, and Northern Virginia areas issued monthly by the Virginia Department of Labor and Industry.

TABLE 20. DISTRIBUTION OF FAMILY INCOME, VIRGINIA PLANNING DISTRICTS:

(Percent of Families)

Area	Less Than $1,000	$1,000-1,999	$2,000-2,999	$3,000-3,999	$4,000-4,999	$5,000-5,999	$6,000-6,999	$7,000-7,999	$8,000-8,999	$9,000-9,999	$10,000-11,999	$12,000-14,999	$15,000-24,999	$25,000-49,999	$50,000+
Lenowisco Planning District 1	6.86	11.20	9.64	10.24	7,99	8.59	7.59	7.44	6.88	5.24	7.99	5.59	3.82	0.77	0.15
Cumberland Plateau Planning District 2	4.63	8.82	8.41	9.18	8.90	8.64	7.99	7.95	7.78	6.50	9.15	6.50	4.34	0.90	0.30
Mount Rogers Planning District 3	3.53	6.48	7.05	8.49	9.55	9.92	9.25	9.00	7.93	6.55	9.09	6.55	5.23	1.18	0.19
New River Valley Planning District 4	2.43	4.64	5.10	5.83	6.17	8.30	9.38	8.36	8.43	7.37	12.29	9.86	9.82	1.72	0.29
Fifth Planning District 5	1.72	3.17	4.31	5.56	5.61	6.91	7.80	7.92	8.31	7.55	13.90	12.51	11.74	2.40	0.58
Central Shenandoah Planning District 6	2.05	4.17	4.86	6.29	6.60	8.11	8.14	8.92	8.29	7.06	11.99	11.62	9.49	2.08	0.36
Lord Fairfax Planning District 7	2.46	4.39	5.34	6.17	7.33	8.69	9.71	8.91	8.30	7.46	11.90	9.52	7.53	1.85	0.44
Northern Virginia Planning District 8	1.51	1.08	1.43	1.99	2.47	3.14	3.62	4.54	4.84	5.11	10.74	15.44	32.00	11.07	1.00
Rappahannock-Rapidan Planning District 9	3.56	5.45	5.89	7.38	8.38	8.47	8.91	7.60	7.81	5.57	10.25	9.39	8.49	2.22	0.62
Thomas Jefferson Planning District 10	2.94	5.28	5.72	6.51	6.80	7.84	7.53	7.34	6.76	6.29	11.54	10.75	10.67	3.29	0.68
Central Virginia Planning District 11	2.04	4.06	5.08	6.08	6.20	7.39	7.29	7.77	7.96	7.23	13.68	12.35	10.26	2.19	0.43
West Piedmont Planning District 12	2.41	5.01	5.18	5.94	7.89	8.51	8.75	8.32	7.90	7.85	12.90	9.87	7.75	1.47	0.24
Southside Planning District 13	4.06	8.30	8.90	9.23	9.04	8.56	8.17	7.66	7.09	5.56	9.33	7.61	5.26	1.06	0.17
Piedmont Planning District 14	4.82	7.97	8.57	8.43	9.49	9.56	8.18	6.83	5.99	6.07	8.98	7.82	5.80	1.04	0.45
Richmond Regional Planning District 15	2.08	2.56	3.59	4.30	5.20	5.55	6.17	6.92	7.16	7.23	13.70	14.84	16.08	3.62	1.00
Radco Planning District 16	2.42	4.47	4.18	5.14	5.64	7.66	8.92	9.09	8.41	6.55	10.84	12.22	12.06	1.84	0.54
Northern Neck Planning District 17	4.94	8.57	8.88	10.50	8.63	8.82	7.57	7.24	6.46	5.35	7.44	6.43	6.87	1.83	0.45
Middle Peninsula Planning District 18	3.47	6.06	7.00	7.91	7.26	8.48	7.29	7.84	7.35	6.91	9.82	10.16	8.59	1.42	0.44
Crater Planning District 19	3.29	3.89	4.84	6.09	6.00	7.49	7.86	8.26	7.50	7.42	12.12	11.81	11.23	1.89	0.31
Southeastern Virginia Planning District 20	4.20	3.50	4.57	5.48	6.08	6.97	7.34	7.87	7.38	6.86	12.05	12.32	12.58	2.25	0.55
Peninsula Planning District 21	3.03	2.34	3.51	4.27	5.08	6.10	6.91	7.25	7.69	7.33	13.11	13.99	16.33	2.53	0.54
Accomack-Northampton Planning District 22	5.65	8.40	10.55	11.23	10.24	10.28	7.40	7.81	5.76	4.57	6.57	5.08	5.40	1.07	0.00
State	2.82	3.75	4.43	5.27	5.77	6.57	6.86	7.18	7.03	6.58	11.73	12.20	15.23	3.97	0.61

C. Distribution of Income

The distribution of family income provides data on the number of families receiving income within a specified range. The data in Table 20 show the percentage of families in each planning district that received income within the following ranges: less than $1,000, $1,000-$1,999, $2,000-$2,999, $3,000-$3,999, $4,000-$4,999, $5,000-$5,999, $6,000-$6,999, $7,000-$7,999, $8,000-$8,999, $9,000-$9,999, $10,000-$11,999, $12,000-$14,999, $15,000-$24,999, $25,000-$49,999, and $50,000 and over.

As was expected, areas with a high average income also had a large number of families with a relatively high income. For example, in the Northern Virginia area, over 12% of all families had incomes in excess of $25,000, compared to low income areas such as the Southwest, Southside, and Eastern Shore areas, where this percentage varied from 1% to 1.5%, as a rule. To get some idea of how different the extremes in income distribution were and how these in turn differed from the state distribution, consider Figure 8, which shows the cumulative percentage of all families receiving less than specified levels of income for Northern Virginia, the extreme Southwest; and Virginia as a whole. About 46% of all families in extreme Southwest Virginia had income of less than $5,000 compared with about 22% of all Virginia families and about 8% of Northern Virginia families. On the other hand, only about 10% of Southwest families had income of $10,000 or greater, compared with 32% of all Virginia families, and 60% of Northern Virginia families.

Figure 8. Cumulative Income Distribution, Lenowisco Planning District, Northern Virginia Planning District, and Virginia: 1970

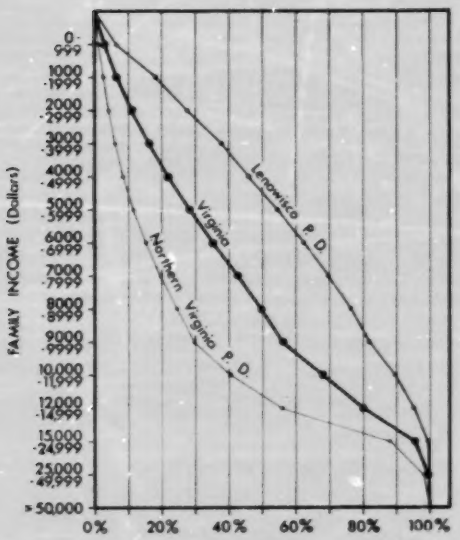
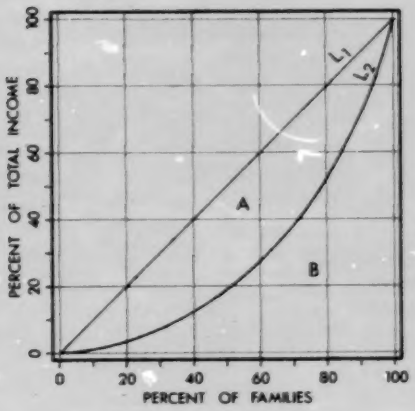


Figure 9. Hypothetical Lorenz Curve



In discussing income distribution, a logical area for inquiry is the equality of income distribution. A common means of measuring equality of income distribution which relates the percentage of total units receiving income (families in this case) is the Lorenz Curve, a hypothetical example of which is shown in Figure 9. The line labelled L_1 in this figure may be called the line of equality. If all families received the same amount of income, this would be the Lorenz Curve. According to L_1 10% of all families receive 10% of total income, 20% of all families receive 20% of total income, and so on. The actual situation is more probably typified by line L_2. In this case, the lowest 10% of all families receive 1% of total income, the lowest 20% receive 4% of total income, and so on.

An important use of the Lorenz Curve is to determine the index of income concentration. This may be defined as the ratio of the area (A) between the diagonal (L_1) and the Lorenz Curve (L_2) to the total area under the diagonal (area A plus area B). Algebraically, this index equals:

$$I = \frac{A}{A+B}$$

The value of the index ranges from a minimum of almost 1.0 (the situation where one family received all the

income in a given area) to 0.0 where all families would receive an equal income. In other words, the higher the value of the index, the more heavily concentrated income is in that particular area.

Unfortunately, these data are not available on a planning district level. The values of the index for those portions of the State for which these data have been computed are shown in Table 21. As the data show, urban and rural nonfarm areas appear to have had relatively less inequality in income distribution than did rural farm areas. This relationship was true for the State as a whole and for a metropolitan-nonmetropolitan classification. It is also interesting to note that, perhaps not surprisingly, suburban areas showed relatively less income inequality than did central cities. In each SMSA, the suburban portion ("urban balance" or in the case of the Norfolk area, Virginia Beach and Chesapeake cities) showed a lower index of income concentration than did the central city (with the exception of Colonial Heights, which is essentially suburban in character).

TABLE 21. INDEX OF INCOME CONCENTRATION, SELECTED AREAS OF VIRGINIA: 1970

Area	Index
Virginia	.379
Urban	.364
Rural Nonfarm	.365
Rural Farm	.423
Metropolitan	.359
Central Cities	.366
Other Urban	.338
Rural Nonfarm	.336
Rural Farm	.401
Nonmetropolitan	.369
Urban	.360
Rural Nonfarm	.360
Rural Farm	.420
Lynchburg SMSA	.347
Lynchburg City	.387
Urban Balance	.279
Newport News-Hampton SMSA	.332
Hampton City	.319
Newport News City	.343
Urban Balance	.287
Norfolk-Virginia Beach-Portsmouth	.360
Chesapeake City	.305
Norfolk City	.384
Portsmouth City	.353
Virginia Beach City	.335
Petersburg-Hopewell-Colonial Heights SMSA	.334
Colonial Heights City	.277
Petersburg City	.366
Urban Balance	.304
Richmond SMSA	.341
Richmond City	.393
Urban Balance	.292
Roanoke SMSA	.342
Roanoke City	.363
Urban Balance	.301
Northern Virginia	.342
Alexandria City	.369
Arlington County	.379
Urban Balance	.321

Chapter VII.

Urban-Rural and Metropolitan-Nonmetropolitan Comparisons

Many of the socioeconomic differences within the State which have been considered in preceeding chapters were probably due in some measure to differences in the degree of urbanization and the racial composition of the population. In this chapter socioeconomic differences for the State are analyzed on an urban-rural and metropolitan-nonmetropolitan basis.

A. Urban-Rural Comparisons

In 1970 2.9 million or 63.1% of Virginia's 4.6 million persons lived in urban areas. Although the definition of urban as used by the Bureau of the Census is rather cumbersome, the urban population essentially includes almost all residents of defined metropolitan areas (both city and suburban portions) and residents of incorporated or unincorporated places of 2,500 or more inhabitants. The balance of the population is rural. The rural population, in turn, is divided into residents of farms (rural farms) and residents of other rural places (rural nonfarm). Of Virginia's 1.7 million rural persons, 1.5 million or 84.4% were classified as rural nonfarm.*

1. Demographic Characteristics. Residents of urban areas and rural nonfarm areas were younger (median age 26.5 years and 26.7 years, respectively) than were farm residents (35.2 years). In urban areas the proportion of the population which was white (81.7%) was slightly higher than that in either the rural nonfarm (80.0%) or rural farm (79.0%) populations. Urban areas were also comprised of more females (103.7 to every 100 males) than were the rural nonfarm and rural farm areas (100.6 and 99.3, respectively). Finally, as might be expected, a larger portion of the urban population was born outside the United States (2.2%) than either the rural nonfarm (0.5%) or the rural farm (0.7%) population.

2. Mobility. Analysis of the data contained in Table 22 show that the urban population was, on the whole, somewhat more mobile than the rural population. For all persons born as United States citizens whose place of birth was reported, only 56.4% of the urban population was born in the State of Virginia, as compared with 81.8% of the rural nonfarm population and 88.8% of the rural farm population. In urban areas a total of 1,163,286 persons reported being born in a state other than Virginia. Of these, 24.0% were born in the Northeast, 16.2% in North Central States, 52.5% in the South (other than Virginia), and 7.3% in the West.** In rural nonfarm areas, some 248,929 persons were born in other states. The percentage distribution for regions of the United States was as follows: Northeast, 18.4%; North Central, 12.1%; South, 64.8%; and West, 4.7%. Finally, some 26,722 residents of farms report a state of birth other than Virginia, of which 15.3% were from the Northeast, 9.7% from North Central States, 71.5% from the South, and 3.5% from the West. In brief then, analysis of state of birth data show that not only were urban residents somewhat less likely to have been born in Virginia than rural residents, but they were also less likely to have been born in other Southern States as well.

The data in Table 22 also show the recent mobility of Virginia's population. A person is considered to have "moved" if his 1970 residence (permanent) was

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* The Bureau of the Census recently revised the distribution of rural farm-rural nonfarm population. The revised data show the rural nonfarm population was 1,524,556 in 1970 and the rural farm population to be 192,784. Because no characteristics of these persons are available, the analysis in this chapter is based on the data originally published by the Bureau. Although the absolute numbers will change, it is unlikely that the percentage distribution of the various socioeconomic indicators discussed in this chapter will change to any considerable extent. See U.S. Bureau of the Census, Rural Population by Farm-Nonfarm Residence for Counties in the United States: 1970 (PC(S1)-27), 1972.

**The states which comprise these areas are listed on page 10.

TABLE 22. MOBILITY STATUS OF VIRGINIA'S POPULATION, BY URBAN AND RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Total Population	2,931,470	1,448,756	268,253
Born in U.S.*	2,866,346	1,442,126	266,451
Born in Virginia	1,533,535	1,143,005	229,966
Born in Other States	1,163,286	248,929	26,722
Northeast	279,612	45,831	4,081
North Central	188,815	30,049	2,582
South	610,158	161,319	19,121
West	84,701	11,730	938
Other and Not Reported	169,525	50,192	9,763
Born Abroad	65,124	6,630	1,802
Total Population Aged 5 or More Residence in 1965:	2,685,173	1,320,650	251,811
1. Same House	1,190,554	763,074	189,162
2. Different House in U.S.	1,242,951	495,791	55,004
Same County	455,066	262,002	36,685
Different County	787,885	233,789	18,319
Same State	325,912	140,404	11,842
Different State	461,973	93,385	6,477
Northeast	107,194	17,523	1,026
North Central	77,345	12,899	573
South	207,628	53,725	4,401
West	69,806	9,238	477
3. Abroad	69,293	9,222	512
4. Moved, 1965 Residence Not Reported	182,375	52,563	7,133

*Includes persons born of U.S. citizens living outside of the United States.

different from his residence in 1965.* The data show that 55.7% of urban residents (aged 5 or more years) moved between 1965 and 1970. The percentage was somewhat lower in rural areas--42.2% for rural nonfarm and 24.9% for rural farm. This of course is based on 1970 residence and consequently measures movement to or within an area. It is probable that the number of rural farm residents was greater in 1965 than it was in 1970.

A person is considered to have "migrated" if he changes his county of residence. Between 1965 and 1970, 787,885 of Virginia's 1970 urban residents aged 5 or more years migrated. This represents 29.3% of all urban residents and 63.4% of all urban residents who moved between 1965 and 1970 (and whose 1965 residence was reported). A majority of these persons, 461,973 or 58.6%, moved into urban areas of Virginia from another state. The data show that 23.2% of interstate migrants living in urban areas of Virginia in 1970 lived in the Northeast in 1965; 16.7% lived in North Central states; 44.9% lived in other Southern states; and 15.1% lived in the West.

The rate of migration was somewhat less in the rural portions of Virginia. In the rural nonfarm sector, a total of 233,789 persons (17.7% of the entire state population and 41.9% of the population moving between 1965 and 1970) changed their county of residence (migrated). Only 39.9% of rural nonfarm migrants, or 93,385 persons, lived in other states, with more than half of these (53,725 or 57.5%) living in other Southern states. 18.8% lived in the Northeast, 13.8% lived in North Central states, and 9.9% lived in the West.

The rate of migration was even lower among residents of farms; 7.3% of these persons migrated in the latter

* Attendance at college or military service is considered by the Bureau of the Census to constitute a permanent change in residence.

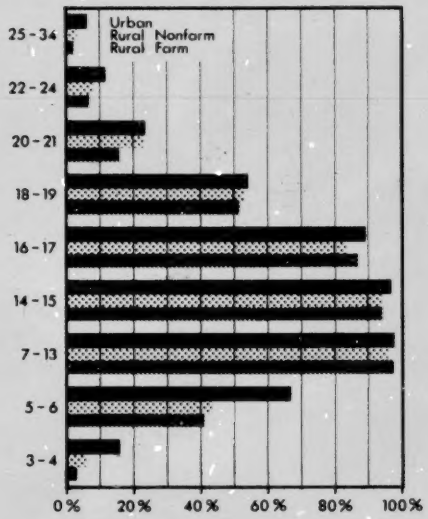
half of the 1960-1970 decade, accounting for only one-third of all rural farm movers. Of the 18,319 migrants only 6,477 or 35.4% were interstate migrants. More than two-thirds of interstate migrants (68.0%) originated in other Southern states, with 15.8% coming from the Northeast, 8.8% from North Central states, and 7.4% coming from the West.

In brief, the pattern of mobility resembled the results of the state of birth analysis. Urban areas generally had a somewhat more mobile population which was more likely to have moved into Virginia from a state outside the census south.

3. Education. Data on the level of educational achievement for the adult population of the State (for these purposes, those aged 25 and over in 1970) are presented in Table 23. The level of educational achievement in urban areas appears to have been somewhat greater than that of rural areas, and rural nonfarm dwellers were better educated, on the average, than were farm dwellers. The median number of school years completed (that is, the number of years at which half the population is above and half below) was 12.2 years for urban areas, 9.7 years for rural nonfarm, and 8.9 years for rural farm.

The percentage of persons with no schooling was quite small--only 1.2% in urban areas and 2.4% in rural areas. However, urban areas generally had a larger number of well educated persons and a smaller number of poorly educated persons than did rural areas. Only 23.9% of urban residents had no secondary education, compared with 45.1% of rural nonfarm residents and 51.2% of rural farm residents. On the other hand, 56.4% of urban residents had completed secondary school (and 28.3% had at least one year of college) compared with 34.5% (and 13.3%) of rural nonfarm residents and 28.6% (and 11.1%) of rural farm residents.

Figure 10. Percent of Population Enrolled in School, by Age and Urban-Rural Residence; Virginia: 1970



Ideally, this is a situation which should change with the passage of time. The 1970 rates of school enrollment by age (see Figure 10) show that there was not a great deal of difference in school enrollment by age between urban and rural areas, although urban rates were higher

TABLE 23. EDUCATIONAL ACHIEVEMENT OF VIRGINIA'S POPULATION AGED 25 AND OVER, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Population 25 and Over	1,530,235	757,769	158,078
Years of School Completed:			
0	17,954	17,886	3,868
1-4	60,037	71,138	16,532
5-6	92,736	89,320	21,010
7	89,539	97,984	25,415
8	105,296	65,607	14,075
9-11	302,125	154,848	31,989
12	428,811	160,559	27,572
13-15	190,555	50,370	9,913
16	140,229	31,196	5,269
17+	102,953	18,861	2,435
Median Years of School Completed	12.2	9.7	8.9

TABLE 24. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Male			
Population 16 and Over	996,919	481,825	96,215
Labor Force	817,596	353,794	70,046
Military	161,708	9,899	293
Civilian Labor Force	655,888	343,895	69,753
Employed	641,630	334,977	68,500
Unemployed	14,258	8,918	1,253
Female			
Population 16 and Over	1,062,045	495,343	97,054
Labor Force	475,636	193,912	31,385
Military	3,535	187	7
Civilian Labor Force	472,101	193,725	31,378
Employed	454,560	184,464	30,119
Unemployed	17,541	9,261	1,259
Percent With Children Aged 0-5 in Labor Force	32.9	35.6	33.6
Percent With Children Aged 6-17 in Labor Force	50.7	50.9	42.9
Percent With No Children Under 18 in Labor Force	46.6	35.9	28.7

at all ages, particularly among the youngest (3-6) and oldest (21-34) segments of the school-going population. The higher rate among young children reflected higher attendance at nursery schools and kindergartens while the higher rate among persons aged 21 and over merely reflects the urban location of the majority of colleges and universities throughout the state. However, in the principle years of school attendance (7-17), there was little difference in rates of enrollment.

The discussion of education differences among urban and rural portions of the state leads to a rather interesting question regarding expenditures by localities for education and consequent outmigration of individuals. In many of the smaller, more rural jurisdictions of the State, the largest single share of local government expenditure is devoted to the provision of educational services. At the same time, analysis of migration trends in Virginia in the period from 1960 to 1970 show that: a) outmigration was a common factor to many of the rural areas of the state and b) the incidence of outmigration was highest among those who recently graduated from high school.* The educational input for outmigrants was paid for by the area of origin, which was, often as not, a relatively impoverished rural area. Consequently, there was outmigration of real assets in the form of human capital from poor areas to relatively wealthy areas. In other words, poor areas of the state subsidized richer areas by this transfer of resources.

4. Employment and Labor Force. Table 24 presents data on the composition of the labor force in Virginia's urban and rural areas. Labor force participation was higher among both sexes in urban areas than it was in rural areas. In urban areas, 82.0% of all males aged 16 and over and 44.8% of all females in this group were in the labor force in 1970. For rural nonfarm areas, these rates were 73.4% for males and 39.1% for females; in rural farm areas, they were 72.8% and 32.2%, respectively. In urban areas, the total labor force was 1,293,232 of which 475,636 or 36.8% was female. For rural nonfarm residents, the total labor force included 547,706

*See William J. Serow and Michael A. Spar, Virginia's Population: A Decade of Change. Net Migration for State Planning Districts, Charlottesville, Tayloe Murphy Institute, 1972.

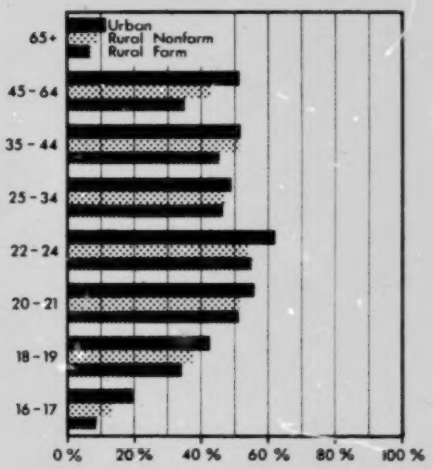
persons, of which 193,912 (35.4%) were female. Finally, among the rural farm population, the labor force comprised 101,431 individuals of which 31,385 or 30.9% were female.

A sizeable portion of the labor force in urban areas included individuals in military service. Among males, 16.2% of all residents aged 16 and over were in the armed forces. These individuals accounted for 19.8% of the male urban labor force. Naturally, among females, the incidence of military personnel was much lower--only 0.7% of the total labor force. The military was a far less significant factor in rural areas. Among the rural nonfarm labor force, only 2.8% of the males and 0.1% of the females in the labor force were military. Among the rural farm labor force, the rates were lower still--0.4% of males and 0.02% of females.

Those persons in the labor force not in the military comprise the civilian labor force. It is this datum which provides the base for measuring unemployment. A person who is not employed, but is actively seeking work (and will accept it) is considered unemployed. In 1970 the rate of unemployment was lower for the urban labor force (2.8% of the civilian labor force) than it was for the rural nonfarm (3.4%), but higher than that of the rural farm labor force (2.5%). The rate of unemployment among women was higher than it was for men in all three categories: urban rates of unemployment were 2.2% for males and 3.7% for females; rural nonfarm rates were 2.6% and 4.8%, respectively; and rural farm rates were 1.8% and 4.0%, respectively.

Somewhat surprising in light of the higher rates of labor force participation among urban women is the fact that the presence of young children (those aged 0 to 5) appeared to be a greater disincentive for labor force participation among urban women than among rural women. As the data in Table 24 show, labor force participation rates for women with children in this age group were higher among rural nonfarm (35.6%) and rural farm (33.6%) women than among urban women (32.9%). The relationship changed somewhat for women with children between the ages of 6 and 17 (and no children aged 0 to 5); rural nonfarm women participated to a slightly greater extent than did urban women (50.9% and 50.7%, respectively), but both groups participated to a somewhat greater extent than did rural farm women (42.9%). Finally, for women without children under 18 years of age, the pattern was the same as for all women--the highest rate of participation was among urban women (46.6%), followed by rural nonfarm women (35.9%) and rural farm women (28.7%). Rates in all three residence categories were lower for women without children under age 18 than they were for women with children aged 6-17 (and among rural farm women even lower than the rate for women with children aged 0-5). This was presumably due to decreasing labor force participation with age (see Figure 11).

Figure 11. Labor Force Participation Rates of Virginia Women by Age and Urban-Rural Residence: 1970



5. Occupational Distribution. The distribution of Virginia's labor force by occupation in 1970 is presented for the urban, rural nonfarm, and rural farm segments in Table 25. The data represent the employed civilian labor force in each instance. As is to be expected, there was considerable variation in the occupational composition. In urban areas, white collar workers (professionals, managers, sales workers, and clerical workers) accounted for 58.0% of the labor force. This percentage was somewhat lower in rural areas, totaling 34.3% of employment in rural nonfarm areas and 25.8% of employment in rural farm areas.

Blue collar and agricultural employment were of relatively greater importance in rural areas. Blue collar workers (craftsmen, operatives, and nonfarm laborers) comprised only 29.1% of the urban labor force, compared with 50.5% of the rural nonfarm and 40.0% of the rural farm labor force. Obviously, agricultural employment was a much larger share of the labor force among the rural

TABLE 25. OCCUPATIONAL DISTRIBUTION OF VIRGINIA'S LABOR FORCE, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Professional	211,987	55,216	7,575
Managerial	105,386	35,728	5,034
Sales	83,142	24,661	3,761
Clerical	235,467	62,574	9,066
Total White Collar	635,982	178,179	25,436
Craftsmen	142,908	89,168	12,164
Operatives	100,216	107,738	16,804
Transport Operatives	37,244	27,838	4,504
Nonfarm Laborers	39,075	37,654	5,932
Total Blue Collar	319,443	262,398	39,404
Farmers	1,149	5,020	19,193
Farm Laborers	2,053	12,435	6,316
Total Agricultural	3,203	17,455	25,509
Service	115,779	47,236	6,034
Private Household	21,783	14,173	2,236
Total Service	137,562	61,409	8,270
TOTAL	1,096,190	519,441	98,619

farm population (25.9%) than among either the rural nonfarm (3.4%) or urban (0.3%) populations.

Finally, there was not a great deal of variation in the relative number of individuals engaged in service occupations, although the share in farm areas was somewhat lower (8.4%) than in rural nonfarm (11.8%) and urban areas (12.5%).

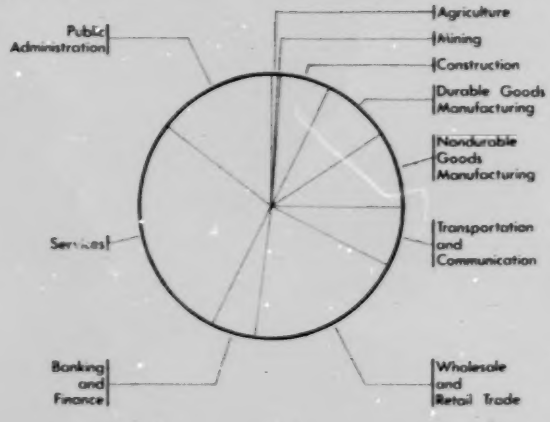
Looking at the matter from a slightly different perspective, urban areas contained 63.9% of the State's employed labor force and accounted for 75.7% of white collar employment, but only 51.4% of blue collar and 6.9% of agricultural employment. The share of service employment located in urban areas (66.4%) was slightly higher than the share of total employment in urban areas.

Rural nonfarm residents comprised some 30.3% of the State's employed civilian labor force. These areas contained a disproportionately high share of blue collar employment and a somewhat higher share of agricultural employment (42.2% and 37.8%, respectively) but relatively low shares of white collar (21.2%) and service employment (29.6%).

Finally, while rural farm areas contained only 5.8% of the State's employed civilian labor force, these areas contained fully 55.3% of the agricultural labor force. Additionally, rural farm areas accounted for 3.0% of white collar employment, 6.3% of blue collar employment, and 4.0% of service employment.

6. Industrial Composition. Data which depict the industrial composition of Virginia's employed civilian labor

Figure 12. Industrial Composition of Virginia's Urban Labor Force: 1970



force are presented in Table 26. These data show, on a place of residence basis, the number of workers classified by the principle good or service produced by their employer. Such data can be very useful in comparative analyses of the economy of given areas or sectors of the State. The presentation of data specific to urban-rural residence, should show the pattern of concentration of different industries within the State of Virginia.

The data show considerable variation in the industrial mix of the labor force in urban, rural nonfarm, and rural farm areas. Nearly two-thirds of the urban labor force was concentrated into three industrial categories: services (28.1% of the labor force), wholesale and retail trade (19.4%) and public administration (14.7%). Among rural nonfarm workers, services again accounted for the largest single share of the labor force, with 21.4%. Second was nondurable goods manufacturing with 18.5%, followed by trade with 16.1% of the labor force. Together, these three categories included 55.9% of the labor force for the rural nonfarm population. For the rural farm labor force, the leading sector was agriculture, employing 27.1%. This was followed by trade with 16.4% and nondurable goods manufacturing with 15.7%. These three sectors collectively employed 59.3% of the rural farm labor force.

If the sectors are ranked in relative importance for each of the three residential categories, the result is that urban areas showed the highest rank for five categories (transportation, trade, finance, service, and public administration) and the lowest rank for the other five categories. Rural nonfarm areas had the highest rank in mining, durable goods manufacturing and nondurable goods manufacturing, and construction and were second highest in the other six categories. Rural farm areas were highest in agricultural, second highest in mining, construction, and both manufacturing sectors. The relative industrial mix of all three areas (urban, rural nonfarm, and rural farm) is shown graphically in Figures 12-14.

In order to evaluate the significance of these apparent differences in the industrial mix of the urban and rural portions of the state, location quotients have been constructed. It will be recalled (from Chapter 5) that a location quotient for any industry, L_i, in any geographical area, j, ($L_{i,j}$) may be defined as the ratio of employment in that industrial sector and geographical area ($E_{i,j}$) taken as a percentage of total employment in the area (E_j) to total employment in that sector in the entire state ($E_{i,v}$) considered as a percentage of total employment in the state (E_v), or:

$$L_{i,j} = \frac{E_{i,j}/E_j}{E_{i,v}/E_v}$$

The location quotients for all industrial sectors, classified by urban, rural nonfarm, and rural farm residence, are given in Table 27.

A quotient in excess of unity means that employment in that sector was more

Figure 13. Industrial Composition of Virginia's Rural Nonfarm Labor Force: 1970

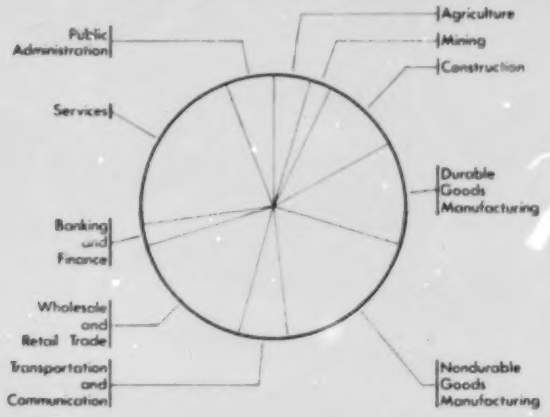


Figure 14. Industrial Composition of Virginia's Rural Farm Labor Force: 1970

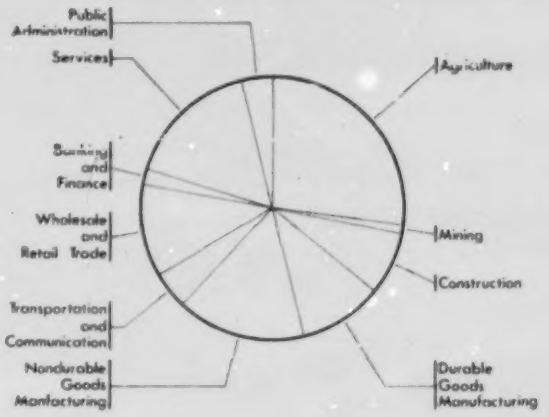


TABLE 26. INUDSTRIAL COMPOSITION OF VIRGINIA'S LABOR FORCE, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Industry			
Agriculture, Forestry, Fisheries	7,044	23,485	26,733
Mining	2,367	13,534	1,166
Construction	68,170	50,932	7,701
Durable Goods Manufacturing	92,794	66,321	9,929
Nondurable Goods Manufacturing	103,811	95,849	15,518
Transportation, Communication, and Utilities	80,790	30,765	4,393
Wholesale and Retail Trade	213,049	83,365	11,383
Finance, Insurance, and Real Estate	60,072	13,420	1,928
Services	307,487	111,292	16,191
Public Administration	160,606	30,748	3,677
TOTAL	1,096,190	519,441	98,619

TABLE 27. LOCATION QUOTIENTS OF INDUSTRIAL COMPOSITION OF VIRGINIA'S LABOR FORCE, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Agriculture	.19	1.35	8.12
Mining	.22	2.61	1.18
Construction	.84	1.33	1.05
Durable Goods Manufacturing	.86	1.30	1.02
Nondurable Goods Manufacturing	.75	1.47	1.25
Transportation, Communication, and Utilities	1.09	.88	.66
Trade	1.08	.89	.64
Finance	1.25	.59	.45
Services	1.11	.84	.65
Public Administration	1.29	.52	.33

TABLE 28. MEAN FAMILY INCOME AND INCIDENCE OF POVERTY FOR VIRGINIA FAMILIES, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Number of Families	729,703	361,472	71,081
Mean Income	$11,779	$8,645	$7,920
Number of Poor Families	66,089	62,593	14,323
Mean Income of Poor Families	$1,925	$2,195	$1,746
Mean Income Deficit	$1,654	$1,503	$1,254
Percent of Families in Poverty	9.1	17.3	20.2
Number of Poor Unrelated Individuals	70,585	38,721	5,979
Percent of Individuals in Poverty	30.5	55.5	52.0
Deficit/Income Ratio for Poor Families	.86	.68	.72
Mean Income as a Percent of State Total	111.5%	81.8%	74.9%

heavily concentrated in the geographical area under study than it was in the entire State. The data show several distinct patterns of concentration. Agriculture and mining were quite noticeably concentrated in one area (rural farm and rural nonfarm respectively), with the other rural area having, in each case, a moderate concentration as well. This was true primarily because urban employment in these industrial sectors was negligible.

The second pattern was that of construction and manufacturing which were both most highly concentrated in rural nonfarm areas (ranging from 1.3 to 1.5). A minor concentration in rural farm areas and a shortage was characteristic in urban areas. The range of values of the quotients for these industries was much less than in the agriculture and mining sectors.

The third pattern was of moderate concentration in urban areas (quotients around 1.1) followed by moderate shortages in rural nonfarm areas (quotients from .85 to .90) and somewhat greater shortages in rural farm areas (quotients about .65). This pattern was followed almost identically in the transportation, trade, and service sectors.

The final pattern was one of relatively high concentration in urban areas with considerable drop off in both rural areas. In other words, these are industries rather highly concentrated in urban areas. This pattern was that of the finance and public administration sectors.

7. Income. Income data for urban, rural nonfarm, and rural farm areas are analyzed on the level of income, the distribution of income, and the incidence of poverty for the three geographical areas under study.

The data indicate that in purely monetary terms, residents of urban areas were somewhat better off than were rural residents. Mean family income in urban areas ($11,779) was 36.3% higher than the mean level of rural nonfarm families ($8,645) and 48.7% higher than the mean level of rural farm families ($7,920). These differences do not reflect differences in cost of living and patterns of consumption, nor do they reflect the greater incidence of self sufficiency in food presumably found in rural areas. However, data on the incidence of poverty do reflect these differentials to some extent, since the poverty threshold criteria (presented in Table 3 in Chapter 1) do allow for farm-nonfarm differentials (as well as age and sex of head of household and family size).

Examination of the data in Table 28 show that even adjusting for these differences, the incidence of poverty was much higher in rural areas than in urban areas. Among rural nonfarm families, some 17.3% received income in 1969 less than the poverty level. At 20.2%, this rate was even higher for rural farm families. But in urban areas, it was only 9.1%. The pattern was similar for unrelated individuals (that is, single persons living alone, constituting a one person household; this does not include the institutional population). In the aggregate, poverty was greater among these perons, but the incidence in urban areas of the State (30.5%) was substantially lower than it was in rural nonfarm (55.5%) and rural farm (52.0%) areas.

Although the incidence of poverty was less among the urban population, it would appear that poor families were

Figure 15. Percentage Distribution of Virginia Families by Income and Urban-Rural Residence, Virginia: 1970

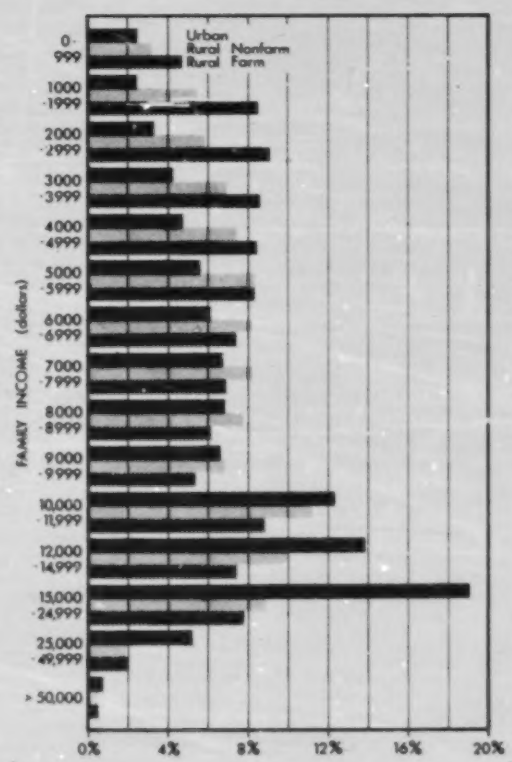


TABLE 29. INCOME DISTRIBUTION OF VIRGINIA FAMILIES, BY URBAN-RURAL RESIDENCE: 1970

	Urban	Rural Nonfarm	Rural Farm
Number of Families With Income:			
Less than $1,000	17,858	11,611	3,349
$1,000-$1,999	17,858	19,617	6,056
$2,000-$2,999	24,138	20,963	6,394
$3,000-$3,999	30,354	24,818	6,080
$4,000-$4,999	34,351	26,768	5,940
$5,000-$5,999	40,582	29,886	5,917
$6,000-$6,999	44,666	29,729	5,287
$7,000-$7,999	49,049	29,465	4,933
$8,000-$8,999	49,311	27,970	4,424
$9,000-$9,999	48,015	24,578	3,867
$10,000-$11,999	89,542	40,523	6,237
$12,000-$14,999	100,620	35,926	5,304
$15,000-$24,999	139,694	31,813	5,528
$25,000-$49,999	38,301	6,429	1,389
$50,000+	5,364	1,376	376
TOTAL	729,703	361,472	71,081

relatively worse off than poor rural families. Mean income of poor urban families would have to increase by 86%, on the average, if all families were to move to the poverty threshold. Among poor rural nonfarm families, this increase would have to be only 68%, on the average, while for poor rural farm families income would have to rise by some 72%. In urban areas, the mean level of income of poor families was only 16.3% of that of all families; for rural nonfarm families, the corresponding percentages are 25.4% and 22.0%, respectively.

The other aspect of income to be considered is the distribution of family income. Table 29 presents this distribution for selected intervals for urban, rural nonfarm, and rural farm families. These data show that a much greater share of rural families received relatively low levels of income than was true of urban families. Only 17.1% of all urban families received less than $5,000, compared with 28.7% of rural nonfarm and 39.1% of rural farm families. On the other hand, the share of urban families with incomes between $10,000 and $14,999 (26.1%) and $15,000 and over (25.1%) was much higher than the respective shares among either rural nonfarm (21.2 and 11.0%) or rural farm (16.2 and 10.3%) families. The complete percentage distribution of income is shown graphically in Figure 15.

To determine the equality of income distribution by family, a device known as the Lorenz Curve is customarily used. The Lorenz Curve shows the relationship between percentage of families (or units) and percentage of total income. With perfect equality of income (that is, all families receiving the same amount of income), the resulting curve would be a straight diagonal line. The closer the actual curve is to the diagonal, the more equitable the degree of income. By measuring the area between the curve and the diagonal and dividing this by the total area under the diagonal, an index of income concentration can be calculated.

Figure 16. Lorenz Curves for Distribution of Family Income, by Urban-Rural Residence, Virginia: 1970

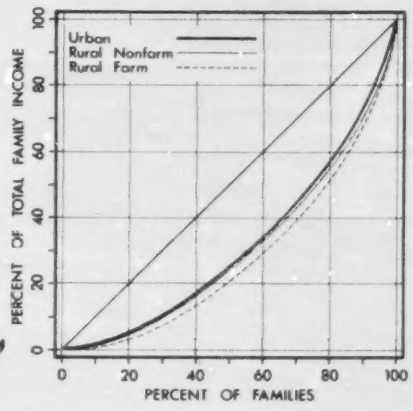


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TABLE 30. GEOGRAPHIC COMPOSITION OF VIRGINIA'S METROPOLITAN POPULATION, CLASSIFIED BY URBAN-RURAL RESIDENCE: 1970

	Total	Central City	Other Urban	Rural Nonfarm	Rural Farm
Lynchburg SMSA	123,474	54,083	18,945	41,690	8,756
Lynchburg City	54,083	54,083			
Amherst County	26,072		7,758	13,733	4,581
Campbell County	43,319		11,187	27,957	4,175
Newport News-Hampton	292,159	258,956	7,843	23,741	1,619
Hampton City	120,779	120,779			
Newport News City	138,177	138,177			
York County	33,203		7,843	23,741	1,619
Norfolk-Virginia Beach	680,600	418,914	249,216	10,499	1,971
Chesapeake City	89,580		82,641	5,745	1,194
Norfolk City	307,951	307,951			
Portsmouth City	110,963	110,963			
Virginia Beach City	172,106		166,575	4,754	777
Petersburg-Colonial Heights-Hopewell	128,809	51,200	45,422	27,050	5,137
Colonial Heights City	15,097	15,097			
Petersburg City	36,103	36,103			
Hopewell City	23,471		23,471		
Dinwiddie County	25,046		9,516	12,025	3,505
Prince George County	29,092		12,435	15,025	1,632
Richmond SMSA	518,319	249,621	179,427	78,676	10,595
Richmond City	249,621	249,621			
Chesterfield County	76,855		41,806	32,613	2,436
Hanover County	37,479		8,294	23,068	6,117
Henrico County	154,364		129,327	20,995	2,042
Roanoke SMSA	181,436	92,115	64,506	23,449	1,366
Roanoke City	92,115	92,115			
Salem City	21,982		21,982		
Roanoke County	67,339		42,524	23,449	1,366
Washington SMSA (Virginia Portion)	921,237		808,864	104,632	7,741
Arlington County	174,284		174,284		
Fairfax County	455,021		407,901	44,269	2,851
Loudoun County	37,150		10,024	24,931	2,195
Prince William County	111,102		72,975	35,432	2,695
Alexandria City	110,938		110,938		
Fairfax City	21,970		21,970		
Falls Church City	10,772		10,772		
Total	2,846,034	1,124,889	1,374,223	309,737	37,185

As the value of the index approaches 1.0, the degree of inequality in the distribution of income increases.

Lorenz curves for Virginia's urban, rural farm, and rural nonfarm families are shown in Figure 16. The curves for the urban and rural nonfarm populations are practically identical, as are the indices of income concentration in these areas--.366 for urban families and .365 for rural nonfarm families. However, the curve for rural farm families shows that the degree of inequality of income distribution in this group was somewhat greater. This is confirmed by the relatively high index of income concentration, .423. Thus, while there was an uneven distribution of income in each area (a perfectly even income distribution is possible only in theory), the degree of inequality was somewhat greater among rural farm families than among either urban or rural nonfarm families.

B. Metropolitan-Nonmetropolitan Comparisons

This section is designed to augment the foregoing urban-rural analysis. Metropolitan areas are rather heavily urban--in 1970 total metropolitan population was 2,846,034 (or 61.2% of the State's population). Of this, 1,124,889 (39.5% of all metropolitan population) were located in central cities; 1,374,223 (48.3%) lived in other urban portions of metropolitan areas; 309,737 (10.9%) lived in rural nonfarm areas; and the remaining 37,185 (1.3%) lived in rural farm areas within metropolitan areas. Table 30 lists the components of Virginia's metropolitan areas and classifies the population as central city, other urban, rural nonfarm, or rural farm.

Those 1,802,460 Virginians not living in metropolitan areas comprised the nonmetropolitan population. Of

these persons, 23.9% lived in nonmetropolitan urban areas, 63.3% lived in rural nonfarm areas, and 12.8% lived in rural farm areas.*

The characteristics of the metropolitan-nonmetropolitan populations will be discussed in somewhat more abbreviated fashion than the urban-rural analyses. Table 31 presents selected indicators of mobility and educational achievement for the metropolitan-nonmetropolitan populations.

1. Demographic Characteristics and Mobility. Briefly, the data show that the metropolitan population of Virginia in 1970 was younger and more heavily male than was the nonmetropolitan population. Only about half of the residents of metropolitan areas were born in Virginia, compared with over four-fifths of nonmetropolitan residents. The population was also much more mobile than was the nonmetropolitan population. More than 56% of the metropolitan population changed residence (moved) between 1965 and 1970, and more than half of the movers (53.1%) changed their county of residence (migrated). In turn, a majority of migrants (59.3%) moved into Virginia from another state--44.4% came from other Southern states. On the other hand, only 39.2% of nonmetropolitan residents moved in the period from 1965 to 1970. Among this relatively small groups of movers, there were also relatively fewer migrants (40.3%), and among migrants, in turn, there was a relatively small influx from other states (38.3%). Additionally, interstate migrants to nonmetropolitan areas in Virginia were somewhat more likely to have originated in a Southern state--only 39.6% of migrants to these areas came from Northeastern, North Central, or Western states.

2. Education. The level of educational attainment was also substantially higher among residents of metropolitan areas. Median years of school completed for these persons (12.2 years) was 27% higher than the 9.6 years recorded for nonmetropolitan residents. Almost half of the latter group (45.9%) had no more than an elementary school education, and only about 14% had one or more years of post-secondary education. By way of contrast, only about one-fourth of metropolitan area residents had completed eight or fewer years of school; the proportion with one or more years of college education was slightly more than one-fourth (28.3%).

3. Labor Force and Employment. Table 32 presents a summary of labor

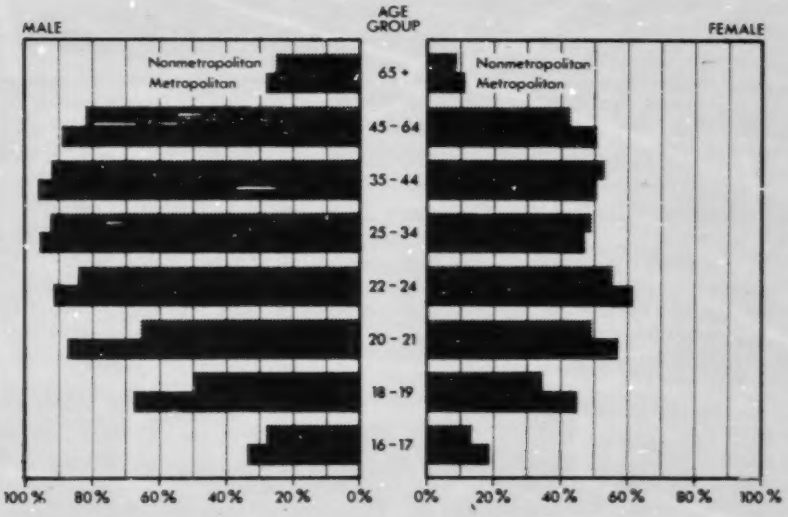
*The complete census count was used to make these tabulations, although the rural farm-rural nonfarm distinction is estimated on the basis of sample (fourth count) data. Due to small discrepancies between the complete count and sample data, the totals which appear in some of the following tables will not necessarily agree with the numbers presented in the text. The overall differences are so small that they are of no importance.

TABLE 31. MOBILITY AND EDUCATIONAL CHARACTERISTICS OF VIRGINIA, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

	Metropolitan	Nonmetropolitan
Total Population	2,846,034	1,802,460
Median Age	26.0	28.4
Male-Female Ratio	.987	.959
Percent Born in Virginia	55.5	84.1
Total Population, 5 Years Old and Over	2,600,775	1,656,859
Movers	1,466,106	648,738
Migrants	778,452	261,541
Interstate	461,637	100,198
Percent From Northeast	23.0	19.6
Percent From North Central	16.9	13.0
Percent From South	44.4	60.4
Percent From West	15.7	7.0
Total Population Aged 25 and Over	1,467,547	978,535
Percent With 0-8 Years of School	23.1	45.9
Percent With 9-11 Years of School	20.1	19.9
Percent With 12 Years of School	28.5	20.3
Percent With 13+ Years of School	28.3	13.9
Median Number of School Years Completed	12.2	9.6

force characteristics for Virginia's metropolitan and nonmetropolitan areas. The overall rate of labor force participation among individuals aged 16 and over (including military personnel) was somewhat higher in metropolitan areas (63.3%) than nonmetropolitan areas (55.2%), although part of the difference was due to the much larger concentration of military personnel in the metropolitan areas. Considering the civilian labor force as a percentage of the population aged 16 and over, the rate of labor force participation is 54.68% in metropolitan areas and 54.75% in nonmetropolitan areas--in other words the greater labor force participation in metropolitan areas is due exclusively to the fact that 97% of the military personnel in the state are located in metropolitan areas.

Figure 17. Labor Force Participation Rates, by Age, Sex, and Metropolitan-Nonmetropolitan Residence: 1970



Making a similar correction separately by sex, we find that 65.6% of metropolitan males and 44.1% of metropolitan females were in the civilian labor force. In nonmetropolitan areas, the corresponding rates of civilian labor force participation were 71.5% and 39.2%, respectively. It is also because of the high proportion of military personnel in metropolitan areas (and the high proportion of military personnel who are male--97.9%) that females comprised a relatively smaller share of the metropolitan labor force than they are of the nonmetropolitan labor force, even though female labor force participation rates were higher in metropolitan areas. Complete labor force participation rates for each sex are given in Figure 17.

The rate of unemployment, which is measured only for the civilian labor force, was considerably lower for metropolitan area residents. Only 2.67% of the civilian labor force residing in metropolitan areas was unemployed (out of work and actively seeking work) at the time of the Census (April 1, 1970), compared with 3.44% of the nonmetropolitan civilian labor force. This was true for each sex, although unemployment among males was lower than unemployment among females.

4. Occupational and Industrial Composition. In terms of the occupational composition of the labor force, the metropolitan labor force was primarily engaged in white collar occupations (professional, managerial, clerical, and sales), with somewhat smaller shares of employment in blue collar (craftsmen, operatives, and laborers) and service occupations. Employment in agricultural occupations (farmers and farm laborers) was extremely

TABLE 32. EMPLOYMENT, LABOR FORCE, OCCUPATIONAL AND INDUSTRIAL CHARACTERISTICS OF VIRGINIA, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

	Metropolitan	Nonmetropolitan
Population Aged 16 and Over	1,967,794	1,261,607
In Labor Force	1,246,298	696,071
Labor Force Participation Rate	63.3%	55.2%
Armed Forces	170,300	5,329
Civilian Labor Force	1,075,998	690,742
Employed	1,047,286	666,964
Unemployed Rate	2.67	3.44
Percent of Labor Force Female	35.7	36.9
Percent of Civilian Labor Force Female	41.0	37.1
Percent of Employment:		
White Collar Occupations	58.4	34.2
Blue Collar Occupations	28.8	47.9
Agricultural	0.7	5.9
Service	12.1	12.0
Percent of Employment in:		
Agricultural Industries	1.1	6.9
Mining	0.1	2.3
Construction	6.8	8.4
Durable Goods Manufacturing	8.5	12.1
Nondurable Goods Manufacturing	8.0	19.8
Transportation, Communication, Utilities	7.7	5.3
Wholesale and Retail Trade	19.2	16.0
Banking and Financial Services	5.7	2.4
Other Services	27.1	22.6
Public Administration	16.0	4.2

TABLE 33. INCOME DISTRIBUTION AND INCIDENCE OF POVERTY, VIRGINIA FAMILIES, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

	Metropolitan	Nonmetropolitan
Number of Families	704,532	457,724
Income Level		
Less Than $1,000	17,357	15,461
$1,000-$1,999	15,917	27,614
$2,000-$2,999	21,791	29,704
$3,000-$3,999	27,156	34,096
$4,000-$4,999	31,236	35,823
$5,000-$5,999	37,351	39,034
$6,000-$6,999	40,989	38,693
$7,000-$7,999	46,012	37,435
$8,000-$8,999	46,734	34,971
$9,000-$9,999	45,728	30,732
$10,000-$11,999	87,245	49,057
$12,000-$14,999	100,541	41,309
$15,000-$24,999	142,258	34,777
$25,000-$49,999	38,803	7,316
$50,000+	5,414	1,702
Median Income	$12,076	$8,247
Number of Families Below Poverty Line	61,586	81,419
Mean Income	$1,914	$2,110
Mean Income Deficit	$1,697	$1,434
Deficit-Income Ratio	.887	.680

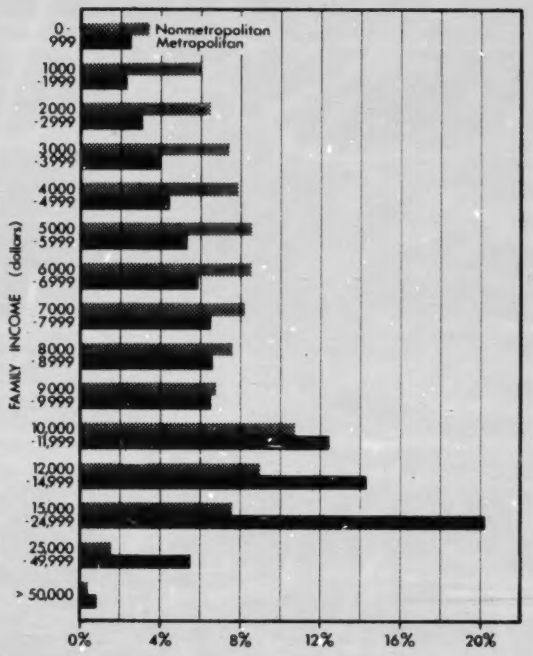
small, as expected. Nonmetropolitan workers were engaged in blue collar and agricultural occupations to a considerably greater extent, in white collar occupations to a considerably lesser extent, and in about the same proportion for service occupations.

There were considerable differences in the industrial composition of the metropolitan and nonmetropolitan labor forces. Briefly, the metropolitan labor force was engaged to a relatively greater extent than the nonmetropolitan labor force in the following industrial groups: transportation, communication, and utilities; wholesale and retail trade; banking and other financial services; other services; and public administration. For the other five industrial groups (agriculture, forestry, and fisheries; mining; construction; and durable and nondurable goods manufacturing), employment was relatively greater among the nonmetropolitan labor force.

5. Income. The final area to be analyzed is income. A summary of income statistics for metropolitan and nonmetropolitan areas is presented below in Table 33. The data show that the proportion of families having a low income (less than $5,000 per year) was substantially higher among nonmetropolitan families (31.2%) than it was among metropolitan families (16.1%). Additionally, the proportion of higher income families ($15,000 or more) was also considerably higher in metropolitan areas (26.5%) than in nonmetropolitan areas (9.6%). These differences were reflected in the higher level of average income found among metropolitan families ($12,076) compared with nonmetropolitan families ($8,247). The income distribution of these groups is presented graphically in Figure 18.

Differences in income level cannot necessarily be equated with differences in economic well-being. Again, differences in cost of living and life style have to be considered. Data which show the incidence of poverty do correct for these omissions to some extent. As the data in Table 33 show, the incidence of poverty was considerably greater among nonmetropolitan residents (17.8% of all families and 52.1% of all unrelated individuals) than it was among metropolitan residents (8.7% of families and 28.9% of unrelated individuals). However, the relative degree of poverty appears to be greater in

Figure 18. Percentage Distribution of Virginia Families by Income and Metropolitan-Nonmetropolitan Residence: 1970



metropolitan areas--that is, poor residents of metropolitan areas are relatively and absolutely poorer than poor persons residing in nonmetropolitan areas. The mean income among poor metropolitan families was $1,914, or 15.8% of the mean level of income for all metropolitan families. For these families to move to the poverty threshold, they would require, on the average, an additional $1,697 or 88.7% of their average earnings. The mean level of family income among nonmetropolitan poor families was greater than that of poor metropolitan families, both in an absolute sense ($2,110 vs. $1,914) and a relative sense. (The $2,110 mean income level of poor nonmetropolitan families is 25.6% of the overall nonmetropolitan mean, and the amount that would be needed to move these poor families to the poverty threshold is $1,434 or 68.0% of mean income among poor nonmetropolitan families.) Thus, while the poor comprise a larger share of the nonmetropolitan population, the poor in these areas appear to be relatively better off than the metropolitan poor.

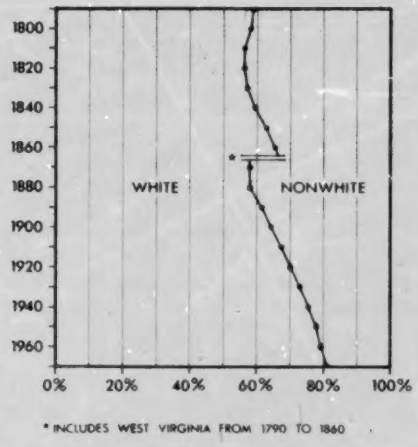
Chapter VIII.

White-Nonwhite Comparisons

In this chapter, analysis turns to socioeconomic differences considered as a function of race. Most of the analysis will be devoted to whites and blacks, the two racial groups which comprise the vast majority of Virginia's population. The end of this chapter will be devoted to a brief analysis exploring the socioeconomic characteristics of two smaller groups, the nonblack-nonwhite population and persons of Spanish language (which is not, strictly speaking a separate racial group).

The 1970 Census of Population shows that of Virginia's 4,648,494 persons, some 3,761,514 (80.9%) were white, 861,368 (18.5%) were black, and 25,612 (0.6%) were other races. This latter group, in turn, is broken down as follows: American Indian, 4,853; Japanese, 3,500; Chinese, 2,805; Filipino, 7,496; and all other, 6,958.* The number of "persons of Spanish language" totaled 48,742. The Bureau of the Census includes as persons of Spanish language those "...persons of Spanish mother tongue and all other persons in families in which the head or wife reported Spanish as his or her mother tongue."**

Figure 19. Percentage Distribution of Virginia's Population, by Race: 1790-1970



* INCLUDES WEST VIRGINIA FROM 1790 TO 1860

A. White-Black Comparisons

While about 81% of the state's population was white in 1970, whites were relatively more concentrated in urban areas--81.7% of the population in urban areas was white, compared with 79.8% in rural areas. In other words, 63.6% of the white population lived in urban portions of the state, compared with 60.1% of the black population.

From 1960 to 1970, the white population of Virginia increased by some 19.7%, while the black population rose by only 5.5%. The difference was the result of the high rate of inmigration among whites during the intercensal period, and the moderately high rate of outmigration of blacks during the same period. The high volume of white inmigration during the 1960's and the continued outflow of blacks strengthens a trend that has been a more or less persistent pattern in the state--the proportion of the population which is white has been increasing.

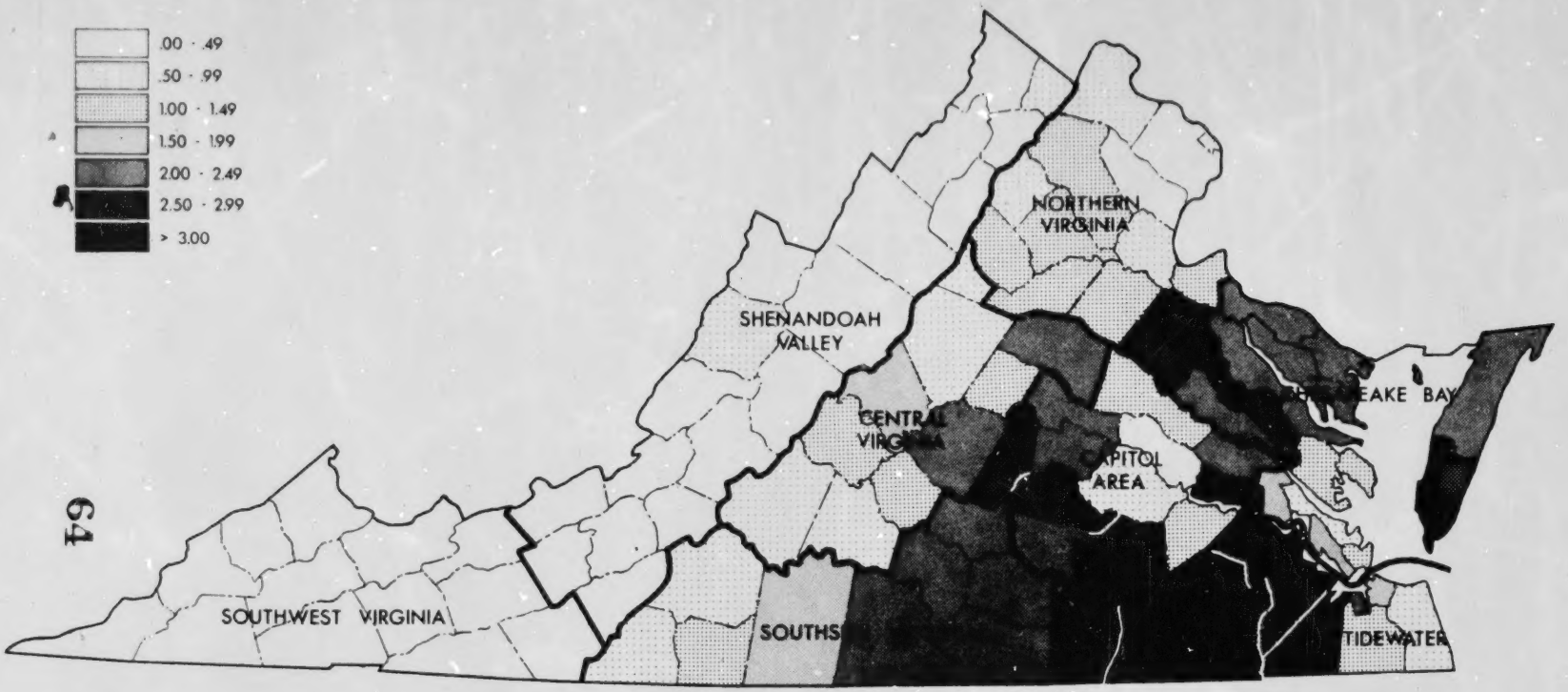
As Figure 19 shows, the first census of the United States, taken in 1790, showed that about two-fifths of the population of Virginia was nonwhite. The share increased through 1820, then gradually dropped through 1860. The increase between 1860 and 1870 reflects the separation of western counties into the state of West Virginia in 1863. From 1870 to 1970, there has been a consistent decline in the relative number of nonwhite Virginians.

1. Demographic Characteristics. In terms of demographic characteristics in 1970, the white population was, on the average, somewhat older than the black population--median age among whites

*These are complete count totals and may differ slightly from the totals based on sample data used to analyze socioeconomic characteristics.

**U.S. Bureau of the Census, General Social and Economic Characteristics, Virginia (Washington, 1972), p. App-7.

FIGURE 20. INDEX OF CONCENTRATION OF BLACK POPULATION IN VIRGINIA CITIES AND COUNTIES: 1970



SOUTHWEST VIRGINIA: Bristol, Galax, Norton

SHENANDOAH VALLEY: Buena Vista, Clifton Forge, Covington, Harrisonburg, Lexington, Radford, Roanoke, Salem, Staunton, Waynesboro, Winchester

NORTHERN VIRGINIA: Alexandria, Fairfax, Falls Church, Fredericksburg

CENTRAL VIRGINIA: Bedford, Charlottesville, Lynchburg

SOUTHSIDE VIRGINIA: Danville, Emporia, Martinsville, South Boston

CAPITOL AREA: Colonial Heights, Hopewell, Petersburg, Richmond

CHESAPEAKE BAY: Hampton, Newport News, Williamsburg

TIDEWATER: Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk, Virginia Beach

was 27.6 years versus 23.1 years for blacks.* In terms of the sex composition of the state, a greater proportion of whites were males (49.6%) than was true of blacks (48.6%).

The geographic composition of the black population was somewhat different from that of the state as a whole. Blacks were located in disproportionately low numbers in the portions of the state located west of the Blue Ridge Mountains and in Northern Virginia. In Southside, Northern Neck and Eastern Shore areas, the proportion of blacks was 40% or more.

Figure 20 shows the index of the black population for each city and county in the state. This index is computed by dividing the percentage of the state's black population living in the area by the percentage of the total population of the state living in the area. A value greater than 1.0 indicates a higher concentration of blacks in the area than in the state as a whole. The highest concentration was found in Charles City County, where blacks are four times as numerous as they were in the state as a whole (in relative terms). The lowest concentration was found in the nearby city of Colonial Heights--here, the index value was .003.

2. Mobility. Mobility characteristics for the white and black populations of the state are presented in Table 34. Remembering that the data are presented by place of residence, it is not surprising to see that the white population of the state was somewhat more mobile than the black population. This was a natural consequence of inmigration of whites to Virginia and outmigration of blacks from Virginia. Thus, while about two-thirds of white Virginians were born in the Commonwealth (64.6%), somewhat over four-fifths of all black Virginians (85.6%) were born in the state.

Of those Virginia residents born in the United States outside of Virginia, 82.7% of the blacks and 52.4% of the whites were born in other Southern states. For blacks, 11.8% were born in Northeastern states, 3.5% were born in North Central states, and 1.9% were born in Western states Although the rank order was the same for whites, the relative proportions are quite different: 24.0% born in Northeast, 16.5% in North Central area, and 7.1% in the West.

In terms of recent mobility (from 1965 to 1970), the proportion of movers among whites aged 5 and over (51.2%)

*The age composition of the races also varied to a considerable extent--some 45.2% of the black population was under the age of 20, compared with 36.5% of the white population. On the other end of the age scale, only 7.6% of the black population was age 65 and over, compared with 8.0% of the white population.

TABLE 34. MOBILITY CHARACTERISTICS OF VIRGINIA, BY RACE: 1970

	White	Black
Native Population	3,702,996	859,055
Born in Virginia	2,212,791	689,247
Born in Another State	1,309,163	123,818
Born in Northeast	314,141	14,652
Born in North Central	216,580	4,325
Born in South	685,788	102,433
Born in West	92,654	2,408
Other and Not Reported	181,042	45,990
Population Aged 5 Years and Over	3,461,214	776,618
Residence in 1965		
Same House	1,690,300	447,871
Different House	1,512,574	273,768
Same County	568,340	183,511
Different County	944,234	90,257
Same State	423,441	53,665
Different State	520,793	36,592
Northeast	115,600	9,493
North Central	87,628	2,721
South	242,177	22,004
West	75,388	2,374
Other and Not Reported	207,392	52,609

TABLE 35. EDUCATIONAL ATTAINMENT OF VIRGINIA'S POPULATION, BY RACE: 1970

	White	Black
Total Population Aged 25 and Over	2,029,501	404,829
Years of School Completed		
0	24,180	15,255
1-4	88,150	59,108
5-6	141,546	60,963
7	165,460	47,077
8	148,152	36,208
9-11	395,894	91,063
12	553,411	60,430
13-15	231,511	17,663
16	164,695	10,827
17+	116,502	6,235
Median	12.1	8.5

was much higher than that for blacks of the same age group (42.5%). (A mover is defined as a person who has changed his or her permanent residence in the period under question.) Considering only persons who migrate (that is, those whose move involved movement across city or county boundaries), 62.4% of white movers migrated, compared with only 33.0% of black movers. Additionally, more than half of all white migrants (55.2%) moved to Virginia from another state, compared with only 40.5% of black migrants. More than half of the black inmigrants (60.1%) originated in other Southern states, compared with 46.5% of white inmigrants. Black inmigrants also tended to originate in the Northeast (25.9%) to a greater extent than did white inmigrants (22.2%), but to a considerably lesser extent from North Central (7.4% of blacks, 16.8% of whites) and Western states (6.5 and 14.5%, respectively).

3. Education. For persons aged 25 and over, there was a significant gap in the average educational attainment of white and black Virginians. The median number of school years completed was 12.1 for whites and 8.5 for blacks. The data in Table 35 show that the percentage of blacks with no more than an elementary school education (54.0%) was almost twice as high as the comparable statistic for the white population (28.0%). Moreover the relative number of blacks with at least one year of post-secondary education was only about one-third of the relative number of whites (8.6% of blacks and 25.3% of whites were at this level of educational attainment).

Despite continuing efforts of local government to improve the quality of educational services to all Virginians, the apparent gap in education has grown wider in recent decades. In 1940 whites had completed 2.8 more years of school than did nonwhites (who were overwhelmingly black). In 1950, this increased to 3.2 years and in 1960 to 3.6 years. This gap remained constant between 1960 and 1970. The gap is not likely to be narrowed if the school enrollment rates of 1970 continue. As Figure 21 shows, rates of enrollment were higher among whites at all age levels.

4. Employment and Labor Force. In terms of overall labor force participation

Figure 21. Percent of Population Enrolled in School, by Age and Race, Virginia: 1970

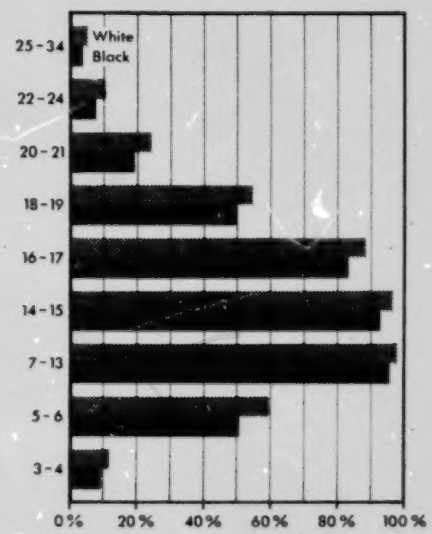


TABLE 36. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY RACE: 1970

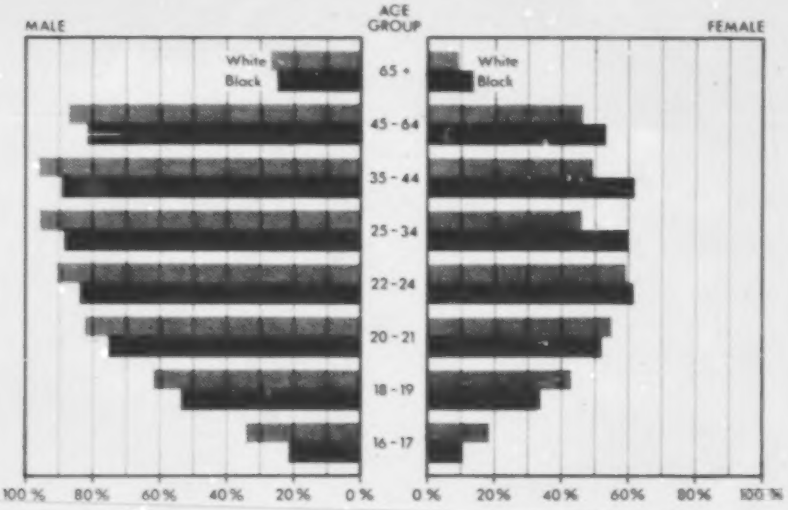
	White	Black
Male Aged 16 and Over	1,305,677	261,332
Labor Force	1,049,209	185,281
Armed Forces	154,180	14,115
Civilian Labor Force	895,029	171,166
Employed	877,398	164,428
Percent Unemployed	2.0	3.9
Female Aged 16 and Over	1,361,191	285,255
Labor Force	563,980	133,794
Armed Forces	3,292	383
Civilian Labor Force	560,688	133,411
Employed	542,377	123,837
Percent Unemployed	3.3	7.2
Labor Force Participation Rate For Women:		
With Children Aged 0-5	30.5%	49.7%
With Children Aged 6-17 (And No Children Aged 0-5)	48.2%	61.4%
With No Children Aged 0-17	42.6%	41.3%

TABLE 37. OCCUPATIONAL DISTRIBUTION OF THE EMPLOYED LABOR FORCE OF VIRGINIA, BY RACE: 1970

	White	Black
Professional	253,108	19,836
Elementary and Secondary Teachers	47,985	9,365
Managerial	140,482	5,330
Sales	106,050	5,295
Clerical	280,295	25,784
Total White Collar	779,935	56,245
Craftsmen	214,939	28,854
Operatives	171,067	53,005
Transport Operatives	49,728	19,664
Laborers	48,589	33,815
Total Blue Collar	484,323	135,338
Farmers	22,333	3,006
Farm Laborers	12,919	7,815
Total Agricultural	35,252	10,821
Service	110,420	57,659
Private Household	9,845	28,202
Total Service	120,265	85,861
Total	1,419,775	288,265

(that is, including military), the rate among whites aged 16 and over was somewhat higher than for blacks. Of the 2,666,868 whites aged 16 or more years, some 1,613,189, or 60.5% were in the labor force in 1970. For the 546,587 blacks in this age group, some 319,075 or 58.4%, were in the labor force. The overall labor force participation rate was somewhat higher for white males (80.4%) than for black males (70.9%). Part of this difference was due to the relatively larger number of whites being found in the armed forces (14.7% of the white male labor force was military, compared with 7.6% of the black male labor force). Adjusting for this difference, the white male civilian labor force participation rate was 68.5% and the black male civilian labor force participation rate was 65.5%. (See Table 36.)

Figure 22. Labor Force Participation Rates, by Age and Sex, Virginia: 1970



Among the female population, the labor force participation rate of blacks was somewhat higher (46.9%) than that of whites (41.4%). The rate of participation was notably higher among black women with dependent children at home than it was for white women. On the other hand, for women with no dependent children, the rate was slightly higher for white women. Examination of the data in Figure 22 show that for women, labor force participation rates were higher for whites through the age of 21; thereafter they were higher for blacks. Among the male population, labor force participation rates were higher for whites at all ages.

The rate of unemployment was substantially higher for blacks of both sexes than it was for whites. Among all blacks in the civilian labor force, the rate of unemployment was 5.4%--3.9% among males and 7.2% among females. For the white civilian labor force, the overall rate of unemployment was only 2.5%--2.0% for males and 3.3% for females. While white males accounted for over half of the state's civilian labor force in 1970 (50.8%), they accounted for only about a third (33.7%) of the unemployed. Black women, on the other hand, accounted for only 7.6% of the civilian labor force, but 18.3% of the unemployed. For white women, these data were 31.9% and 35.0%, respectively; and for black males, they were 9.7% and 12.9%, respectively.

5. Occupational Distribution. As would probably be expected from the preceeding analyses of educational attainment and labor force status, the occupational distributions of the white and black labor force in the state varied to a considerable extent. As the data in Table 37 indicate, over half of the employed whites in the labor force were engaged in white collar occupations (54.9%), and nearly one-

third (32.5%) of all these white collar workers were engaged in occupations classified as professional. Among employed blacks, on the other hand, only 19.5%, or about one-fifth, were engaged in professional occupations. Interestingly, a higher proportion of black white collar workers were engaged in professional occupations (35.3%) than white. This was probably due to the fairly high proportion of elementary and secondary school teachers in the black labor force. Nearly half of all black professionals (47.2%) taught at the elementary or secondary level. This was the only individual white collar occupation where blacks comprised about the same share of employment as they did for the entire employed labor force (blacks are 16.3% of elementary and secondary teachers, and 16.8% of the employed labor force).

A greater share of blacks were employed in blue collar (46.9%), agricultural (3.8%), and service (29.8%) occupations than was true among employed whites (34.1%, 2.5%, and 8.5%, respectively). Considering the entire range of occupations (presented in Table 12), blacks were employed to a relatively greater extent than whites in the following occupations: operatives in manufacturing and nonmanufacturing industries; truck drivers; other transport operatives; construction laborers; freight, stock, and material handlers; other laborers; farm laborers; cleaning service workers; food service workers; health service workers; and private household workers. In the latter sector, blacks comprised 73.8% of all employees which was the highest for any single sector. On the other hand, only 1.1% of all engineers, 3.8% of physicians and dentists, and 3.6% of all managers were blacks.

As noted earlier, women comprised a significantly larger portion of the black labor force (43.0%) than the white labor force (38.2%). While women in general were more heavily concentrated in white collar occupations than were men (61.1% versus 41.2%), they comprised an especially large portion of clerical workers (74.0%). This was also generally true of blacks, although possibly to a greater extent--58.4% of all blacks engaged in white collar occupations were women, compared with 48.0% among whites engaged in white collar occupations. Women comprised 65.5% of all blacks engaged in professional occupations and nearly 80% of all black elementary and secondary teachers. On the other hand, women comprised only 38.6% of all whites engaged in professional occupations and 78% of all white elementary and secondary teachers.

6. Industrial Composition. In reference to the industrial composition of the labor force (Table 38), there were considerably different patterns of employment for the white and the black members of the labor force. The bulk of the white work force (54.6%) was concentrated in trade, services, and public administration--18.9% of the labor force was engaged in wholesale and retail trade, 23.4% in services, and 12.3% in public administration. Black workers were engaged in the provision of services to a much greater extent than were whites (34.9% of the black labor force), but to a considerably lesser extent in trade (13.4%) and public administration (6.7%). Among other industrial groups, blacks were relatively more concentrated in manufacturing (25.5% of the black labor force versus 21.9% of the white labor force) and agriculture (4.6% of blacks and 3.1% of whites), but relatively less concentrated in mining (0.3% and 1.1%), construction (7.0% and 7.5%), and transportation, communication, and utilities (5.9% and 6.9%).

In the aggregate, blacks comprised 16.8% of Virginia's labor force. They comprised a greater share of the labor force in the following industries: agriculture, durable goods manufacturing (particularly furniture, primary metals, and transportation equipment manufacturing), trucking, utilities, eating and drinking places, and services (most particularly, private households, other personal services, hospitals, and education). On the other hand, blacks were employed in relatively small numbers in mining, nonelectrical machinery manufacturers, printing, communications, general merchandise and motor vehicle retailing, banking, insurance and real estate, miscellaneous educational services, professional services, and public administration.

7. Income. The final area of analysis for white-black differentials is income. The level of income for white families was substantially greater than for black families. Furthermore, since average family size was smaller among white families (3.4 persons) than among black families (4.2 persons), the observed differences in family income assume even greater significance. As the data in Table 39 show, the mean level of income for white families ($11,321) was about 73% greater than that of black families ($6,547). Due to the difference in average family size, mean income per

family member among whites ($3,288) was more than twice as high as was the level for blacks ($1,550).

Over two-fifths of black families (42.6%) received income less than $5,000 compared with only 18.2% of white families. An additional 38.6% of black families received income between $5,000 and $9,999. All told, 81.2% of black families received less than $10,000 in 1969. Among white families, the comparable share was 51.6%. Only 5.0% of black families received over $15,000 in income, compared with 22.6% of white families. (See Figure 23.)

The incidence of poverty was significantly greater among blacks. Although the number of poor white

TABLE 38. INDUSTRIAL COMPOSITION OF THE EMPLOYED LABOR FORCE OF VIRGINIA, BY RACE: 1970

	White	Black	Percent Black
Agriculture, Forestry, Fisheries	43,887	13,239	23.1
Mining	16,255	808	4.7
Construction	106,510	20,046	15.8
Durable Goods Manufacturing	132,870	35,653	21.1
Furniture	29,517	14,404	32.7
Primary Metals	6,855	2,092	23.3
Fabricated Metals	14,778	1,725	10.4
Nonelectrical Machinery	10,581	894	7.8
Electrical Machinery	23,019	3,009	11.5
Transportation Equipment	29,415	8,488	22.3
Other	18,705	5,041	21.1
Nondurable Goods Manufacturing	176,846	37,829	17.6
Food	18,958	8,154	30.0
Textiles	68,702	11,969	14.8
Printing	19,334	1,491	7.1
Chemicals	30,410	3,918	11.4
Other	39,442	12,297	23.7
Transportation, Communications, Utilities	98,550	17,090	14.7
Railroads and Railway Express	16,506	2,509	13.2
Trucking and Warehousing	17,736	4,414	19.9
Other Transportation	22,112	4,178	15.8
Communications	22,384	1,507	6.3
Utilities and Sanitary Services	19,812	4,482	18.4
Wholesale and Retail Trade	268,091	38,527	12.5
Wholesale Trade	48,906	7,732	13.6
Food, Bakery and Dairy Stores	33,644	4,874	12.6
Eating and Drinking Places	30,226	8,352	21.4
General Merchandise	41,891	4,388	9.4
Motor Vehicle Retail Service	36,305	3,460	8.7
Other Retail Trade	77,079	9,721	11.2
Banking and Finance	70,006	5,222	6.9
Banking	26,134	1,581	5.7
Insurance, Real Estate	43,872	3,641	7.7
Services	332,241	100,473	23.1
Business Services	23,408	1,896	7.5
Repair Services	16,878	2,248	11.7
Private Household	10,786	26,863	71.2
Other Personal Services	37,446	16,130	29.9
Entertainment and Recreation	9,115	1,882	17.0
Hospitals	39,144	14,715	27.0
Other Health Services	25,097	3,860	13.3
Elementary, Secondary and Colleges	101,915	25,141	19.7
Other Education Services	7,211	655	9.2
Welfare, Religious Services	23,026	3,519	13.2
Legal, Engineering and Other Professional Services	38,215	3,564	8.5
Public Administration	174,519	19,378	9.9
Total	1,419,775	288,265	16.8

families (88,065) and poor white individuals (81,213) was greater than the number of poor black families (54,183) and poor black individuals (54,183), the incidence of poverty was much higher among black families (29.9% versus 9.0% for white families) and among black unrelated individuals (55.3% versus 32.5% of white unrelated individuals). Somewhat surprisingly, the mean income of poor black families was substantially greater than that of poor white families ($2,322 and $1,846, respectively), and the relative increase in income needed to raise each family to the poverty threshold was less among poor black families (73%) than among poor white families (78%).

Another area which is particularly relevant in analyzing white-black income differentials is the greater rate of female family headship among black families. Among black families, some 23.5% had a female for head, compared with only 8.8% of white families. The level of income for families headed by females was much lower than the level of income for male-headed families. Among white families, mean income was $6,401 for female-headed families and $11,796 for families with a male head.

Figure 23. Percentage Distribution of Virginia Families, by Income and Race: 1970

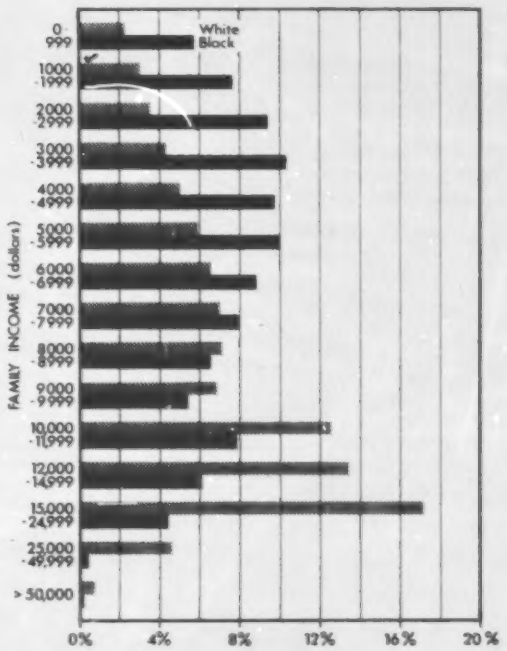


TABLE 39. DISTRIBUTION OF INCOME AND INCIDENCE OF POVERTY, BY RACE, VIRGINIA: 1970

	White	Black
Number of Families With Income:		
Less Than $1,000	22,080	10,398
$1,000-$1,999	29,739	13,695
$2,000-$2,999	34,248	17,061
$3,000-$3,999	42,387	18,551
$4,000-$4,999	49,195	17,514
$5,000-$5,999	57,962	18,036
$6,000-$6,999	63,417	15,903
$7,000-$7,999	68,812	14,293
$8,000-$8,999	69,593	11,852
$9,000-$9,999	66,338	9,831
$10,000-$11,999	121,900	14,046
$12,000-$14,999	130,516	10,996
$15,000-$24,999	168,406	8,033
$25,000-$49,999	45,182	784
$50,000+	6,882	220
Total	976,657	181,213
Percent of Families Below Poverty	9.0	29.9
Mean Income of These Families	$1,846	$2,322
Mean Income Deficit	$1,447	$1,705
Deficit-Income Ratio	.78	.73
Percent of Unrelated Individuals Below Poverty	32.5	55.3
Number of Families With Female Head	85,975	42,499
Mean Income	$6,401	$4,134
Percent Below Poverty	28.0	54.3

TABLE 40. MOBILITY CHARACTERISTICS OF THE NONBLACK-NONWHITE POPULATION, VIRGINIA: 1970

	Number of Persons
Total	25,612
Native	12,872
Born in Virginia	4,468
Born in Different State	5,956
Northeast	731
North Central	541
South	2,377
West	2,307
Born Abroad and Not Reported	2,448
Persons Aged 5 Years and Over	19,802
Residence in 1965:	
Same House	4,619
Different House in U.S.	7,404
Same County	1,902
Different County	5,502
Same State	1,052
Different State	4,450
Northeast	650
North Central	468
South	1,573
West	1,759
Abroad	5,139
Moved, 1965 Residence Not Reported	2,640

For black families, mean income level for families with a female head was $4,134, compared with $7,286 for families with a male head. Similarly, while the incidence of poverty was greater among female-headed families (36.8%) than male-headed families it also was higher among black families with a female head (54.3%) than among white families with a female head (28.0%).

B. The Nonblack-Nonwhite Population

1. Demographic Characteristics. The total number of persons of other races in Virginia in 1970 was 25,612 or 0.55% of the enumerated population. Of these persons, some 4,853 or 18.9% were American Indians, 3,500 or 13.7% were persons of Japanese ancestry, 2,805 or 11.0% were persons of Chinese ancestry, 7,496 or 29.3% were persons of Filipino ancestry, and 6,958 or 27.2% were of miscellaneous ancestry. Some 84.9% of these persons lived in urban areas, with 32.5% living in Northern Virginia, 32.0% living in the Tidewater area, 8.2% in the Peninsula, and 6.7% in the Richmond area.

Over half of these persons, 51.4% were males, although there was considerable variation among the ethnic groups. The percentage of the population that was male was 52.0% for Indians, 31.1% for Japanese, 52.5% for Chinese, and 62.2% for Filipinos.

This small segment of the population was the fastest growing between 1960 and 1970. In 1960, there were only 8,248 persons of these races in Virginia; the 1970 level of 25,612 thus represents an increase of 211%.

In terms of age composition, 31.0% of this population was between the ages of 0 and 17, 65.2% between the ages of 18 and 64, and 3.8% aged 65 and over. There were relatively fewer persons in the youngest and oldest age groups among the nonblack-nonwhite populations than among either the black or white populations.

2. Mobility. As expected, a substantial portion of the "other races" population is not native to the United States. As the data in Table 40 show, only about half (50.3%) was born in the United States (or to citizens of the United States). Only about a third of the native population (34.7%) was born in Virginia; considerable numbers were born in other Southern states (18.5%) and in Western states (17.9%).

TABLE 41. EDUCATIONAL ATTAINMENT OF THE NONBLACK-NONWHITE POPULATION, VIRGINIA: 1970

	Male	Female	Total	Percent
Persons Aged 25 and Over	5,415	6,337	11,752	100.0
Number With				
0 Years of School	131	142	273	2.3
1-4 Years of School	215	234	449	3.8
5-6 Years of School	207	350	557	4.7
7 Years of School	202	199	401	3.4
8 Years of School	223	395	618	5.3
9-11 Years of School	894	1,111	2,005	17.1
12 Years of School	1,204	1,897	3,101	26.4
13-15 Years of School	908	756	1,664	14.2
16 Years of School	458	714	1,172	10.0
17+ Years of School	973	539	1,512	12.9
Median	11.7	11.4	11.5	

This population is also highly mobile. Only 23.3% of all persons aged 5 and over lived in the same house in 1970 as they did in 1965. More than a fourth (27.8%) moved to Virginia from another state (mostly from the South and West) and another fourth (26.0%) from another country. Altogether, only 7,573 or 38.2% of these individuals lived in Virginia in 1965.

3. Education. Data on the educational achievement of the population of other races is presented in Table 41. Of the 11,752 persons aged 25 and over, about one-fifth (19.5%) had an elementary education or less. This was considerably lower than the comparable figure for whites (28.0%) and blacks (54.0%). Similarly, the share of persons with at least one year more than a secondary education, 37.1%, was substantially greater than the comparable statistic for the white and black populations (25.2 and 8.6%, respectively). Almost one-fifth of all males in this population group (18.0%) completed at least one year of graduate or professional education.

4. Labor Force and Employment. The high level of educational attainment is consistent with the high rate of labor force participation among the nonblack-nonwhite population. As the data in Table 42 show, the labor force participation rates for males was very high (87.4%), probably due in considerable portion to the relatively large number of military personnel included in this population group and to differences in age composition. Somewhat over half of all male members of the labor force (51.9%) were in the armed

TABLE 42. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF THE NONBLACK-NONWHITE POPULATION, VIRGINIA: 1970

	Male	Female	Total
Total Aged 16 and Over	7,950	7,996	15,946
In Labor Force	6,946	3,159	10,105
Labor Force Participation Rate	87.4%	39.5%	63.4%
Armed Forces	3,605	54	3,659
Civilian Labor Force	3,341	3,105	6,446
Employed	3,281	2,929	6,210
Unemployed	60	176	236
Unemployment Rate	1.8%	5.7%	3.7%
Labor Force Participation Rate For Women With:			
Children Aged 0-5		24.6%	
Children Aged 6-17, None Aged 0-5		41.3%	
No Children Aged 0-17		50.3%	

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forces. This factor was also a probable cause of the high degree of mobility found in this population as well as the concentration of the nonblack-nonwhite population in the Northern Virginia and Tidewater areas. Additionally, this factor may partially explain the relatively low rate of labor force participation among females--only 39.5% compared with a rate of 41.4% for whites and 46.9% for blacks. Although their number is absolutely small (54), members of the armed forces also accounted for a considerably greater portion of the labor force of female persons of nonblack-nonwhite races (1.7%) than is true for white (0.6%) or black (0.3%) women.

Considering the incidence of unemployment among members of the civilian labor force, the data show that for males, the rate among members of other races (1.8%) was marginally lower than the rate for whites (2.0%) and substantially lower than the rate for blacks (3.9%). The pattern was somewhat different for females with their rate of unemployment (5.7%) being considerably greater than that for white women (3.3%), but somewhat lower than that for black women (7.2%).

For women with children of preschool age (0-5), the rate of labor force participation (24.6%) was considerably lower than the rate for white women (30.5%) and black women (49.7%) with children of the same age. For women with children of school age (6-17), but no children aged 0-5, the pattern was

TABLE 43. OCCUPATIONAL DISTRIBUTION AND INDUSTRIAL COMPOSITION OF THE EMPLOYED NONBLACK-NONWHITE LABOR FORCE, VIRGINIA: 1970

Occupational	Number	Percent
Total	6,210	100.0
Professional	1,834	29.5
Health	577	9.3
Managerial	336	5.4
Sales	219	3.5
Clerical	1,028	16.6
White Collar	3,417	55.0
Craftsmen	447	7.2
Nontransport Operatives	686	11.1
Transport Operatives	194	3.1
Nonfarm Laborers	257	4.1
Blue Collar	1,584	25.5
Farmers	23	0.4
Farm Laborers	71	1.1
Agriculture	94	1.5
Service	970	15.6
Food	501	8.1
Private Household	145	2.3
Total Service	1,115	18.0

Industrial	Number	Percent
Total	6,210	100.0
Agriculture, Forestry, Fisheries	136	2.2
Mining	4	0.1
Construction	247	4.0
Durable Goods Manufacturing	521	8.4
Nondurable Goods Manufacturing	503	8.1
Transportation, Communication, and Utilities	308	5.0
Wholesale and Retail Trade	1,179	19.0
Eating and Drinking Places	494	8.0
Banking and Finance	192	3.1
Services	2,256	36.3
Hospitals	579	9.3
Other Health	121	1.9
Public Administration	864	13.9

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similar, with nonblack-nonwhite women participating to a lesser extent (41.3%) than either white (48.2%) or black (61.4%) women. However, for women with no children aged 17 or less the pattern was reversed; women of other races participated in the labor force to a greater extent (50.3%) than did white (42.6%) or black (41.3%) women. Possibly, this difference was due to differences in the age composition of women with no children of school age.

5. Occupational and Industrial Composition. The distribution of the 6,210 employed persons of other races by occupation and by industry are presented in Table 43. The data show that these persons were engaged in white collar occupations at about the same rate as whites (55.0% of the other races labor force and 54.9% of the white labor force). The percentage of professional workers of other races (29.5%) was much greater than observed for whites (17.8%). This was probably due to the relatively high proportion of these workers engaged in health-related fields (physicans, nurses, and other health professionals)--9.3% of the employed civilian labor force. By way of contrast only 2.2% of the white civilian labor force and 1.0% of the black civilian labor force were engaged in these occupations.

The proportion of persons of other races engaged in blue collar and agricultural occupations (25.5% and 1.5%, respectively) was lower than the rates for either whites (34.1% and 2.5%, respectively) or blacks (46.9% and 3.8%). Nonblack-nonwhite workers were engaged in service occupations at a rate more than twice that of whites (18.0% versus 8.5%), but much less than that of blacks (29.8%). A considerable portion of non-household service workers (501 of 970 or 51.6%) were engaged in food services, probably primarily in ethnic restaurants.

Considering industrial composition, members of other races were concentrated in trade (19.0%), services (36.3%), and public administration (13.9%) to an extent greater than either whites (18.9%, 23.4%, and 12.3%, respectively) or blacks (13.4%, 34.9%, and 6.7%, respectively). Additionally, these persons were located in banking and finance (3.1%) to a greater extent than were blacks (1.8%) but to a lesser extent than were whites (4.9%). As might be expected from the occupational composition, the relative share of the nonblack-nonwhite labor force employed in eating and drinking places (8.0%) and engaged in health services (11.2%) was much greater than the corresponding share for whites (2.1% and 4.6%) or for blacks (2.9% and 6.4%, respectively). While persons of other races comprised only 0.36% of the employed civilian labor force, they totaled 1.26% of all those employed in eating and drinking places and 0.84% of those employed in the provision of health services.

6. Income. The data in Table 44 show that the mean income level of the 4,386 nonblack-nonwhite families ($9,000) was about midway between the level of white ($11,321) and black ($6,547) families. In terms of income distribution, families of other races showed more of a bimodal distribution than did black or white families. Almost a third of these families (29.3%) had less than a $5,000 income compared with only 18.2% of white families and 42.6% of black families. On the other end of the scale, 17.4% of other races families had an income of $15,000 or more, compared with 22.6% of white families and 5.0% of black families. The relative inequality of the distribution of income among families of other races is also shown by the Lorenz curves in Figure 24. These curves show more inequality in the distribution of income among these families than among either white or black families.

The data in Table 44 also show a female family headship rate for nonblack-nonwhite families of 15.5%. This was higher than the rate among white families (8.8%), but lower than that found among black families (23.5%). The average income of female-headed families of other races ($3,922) was somewhat lower than that of white ($6,401) or black ($4,134) families.

The incidence of poverty among families of other races follows a similar

Figure 24. Lorenz Curves for Distribution of Family Income, by Race, Virginia: 1970

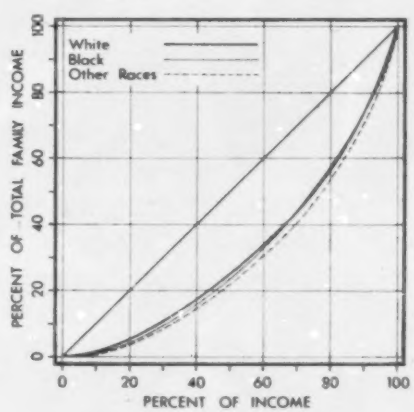

TABLE 44. DISTRIBUTION OF INCOME OF NONBLACK-NONWHITE FAMILIES, VIRGINIA: 1970

	Number	Percent
Total Families	4,386	100.00
With Income:		
Less Than $1,000	340	7.75
$1,000-$1,999	97	2.21
$2,000-$2,999	186	4.24
$3,000-$3,999	314	7.16
$4,000-$4,999	350	7.98
$5,000-$5,999	387	8.82
$6,000-$6,999	362	8.25
$7,000-$7,999	342	7.80
$8,000-$8,999	260	5.93
$9,000-$9,999	291	6.63
$10,000-$11,999	356	8.12
$12,000-$14,999	338	7.71
$15,000-$24,999	596	13.59
$25,000-$49,999	153	3.49
$50,000+	14	0.32
Mean Family Income	$9,000	
Families With Female Head	678	
Mean Income	$3,922	
Families Below Poverty Level	757	
Percent	17.3%	
Mean Income	$1,590	
Mean Income Deficit	$2,060	
Deficit Income Ratio	1.30	
Percent of Unrelated Individuals Below Poverty Level	30.8%	

pattern. Some 17.3% of these families reported a level of income that was below the poverty level, compared with 9.0% of white families and 29.9% of black families. However, the mean income of poor families of other races ($1,590) was lower than that of poor white ($1,846) and poor black ($2,322) families, and the relative increase in income needed to raise these families to the poverty threshold (130%) was also greater than that for white and black families (78% and 73%, respectively). Surprisingly, the incidence of poverty for unrelated individuals of other races (30.8%) was lower than the incidence for white (32.5%) and black (55.3%) unrelated individuals. It is possible that the high proportion of nonblack-nonwhite persons serving in the armed forces was a significant factor in explaining this difference.

C. Persons of Spanish Language

The 48,742 persons of Spanish language accounted for slightly more than 1% of the state's population and were rather heavily concentrated in urban areas (87.6%). More than half (24,727) of the state's persons of Spanish language lived in Northern Virginia; sizeable numbers were also found in the Tidewater (8,392), Peninsula (4,218), and Richmond (3,262) areas.

1. Demographic Characteristics and Mobility. The data on the demography of Virginians of Spanish language, show that this group was predominately male (52.3%) and rather young. About two-fifths of these persons (40.3%) were under the age of 18, compared with 34.4% of all Virginians. Median age for Spanish language Virginians was 21.9 years, nearly five full years younger than the median for the entire state (26.8 years). About three-fourths of these persons (77.0%) were born in the United States. Of these, only 29.1% were born in Virginia. This population was highly mobile between 1965 and 1970, with almost 80% changing residence in this five-year period. Of those whose 1965 residence was in the United States (31,975), over half (17,056) changed their county of residence and a sizeable minority changed their state of residence (13,159). All told, of the 43,214 persons of Spanish language aged five or

TABLE 45. EDUCATIONAL ATTAINMENT OF THE SPANISH LANGUAGE POPULATION, VIRGINIA: 1970

	Spanish Language Persons	Other Persons
Total Aged 25 and Over	20,734	2,425,348
With:		
0 Years of School	192	39,516
1-4 Years of School	371	147,336
5-6 Years of School	701	202,365
7 Years of School	481	212,457
8 Years of School	1,125	183,853
9-11 Years of School	2,191	486,771
12 Years of School	7,098	609,844
13-15 Years of School	3,547	247,291
16 Years of School	2,349	174,345
17+ Years of School	2,679	121,570
Median	12.8	11.6

more years in 1970, only 18,816, or 43.5%, lived in Virginia in 1965.

2. Education. The Spanish language population of the state tended, on the whole, to be somewhat better educated than the balance of the population. As Table 45 indicates, median years of school completed for this population was some 12.8 years, compared with 11.6 years for the remainder of the population. Only 13.8% of the Spanish language population had completed eight or fewer years of school, compared with 32.4% of the remainder of the population. On the other end of the spectrum, 41.4% of the Spanish language population had completed at least one year of post secondary education, compared with 22.4% of the balance of the population. (These differences are reflected in the occupational composition.)

3. Labor Force and Employment. In 1970 65.9% of all Spanish language persons aged 16 and over participated in the labor force (see Table 46). The rate was 86.1% for males and 44.2% for females. Both rates were considerably higher than the rates for the balance of the population (78.8% for males and 42.4% for females). The military comprised a sizeable portion of the Spanish language labor force (35.0% among males and 2.6% among females). Again, both were considerably higher than the proportions found in the remainder of the population (13.6% of males and 0.5% for females).

Among Spanish language members of the civilian labor force, the rate of unemployment (3.5%) was somewhat greater than was found in the rest of the labor force (3.0%). This discrepancy was also

TABLE 46. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF THE SPANISH LANGUAGE POPULATION, VIRGINIA: 1970

	Male	Female
Total 16 Years Old and Over	15,989	14,938
Labor Force	13,770	6,606
Armed Forces	4,822	170
Civilian Labor Force	8,948	6,436
Employed	8,718	6,123
Unemployed	230	313
Rate	2.6%	4.9%
Labor Force Participation Rate of Women With:		
Children Aged 0-5		32.7%
Children Aged 6-17, none Aged 0-5		46.2%
No Children Aged 0-17		49.9%

true for each sex: 2.6% of Spanish language males were unemployed compared with 2.3% of other males, and 4.9% of Spanish language females were unemployed compared with 4.0% of other females.

The presence of young children had a greater effect upon the female labor force participation rate among persons of Spanish language than among the balance of the population. For women with children of preschool age, the labor force participation rate was 32.7% for Spanish language persons and 33.8% for all others. Similarly, for women with children of elementary and secondary school age, the rate was notably lower among Spanish speakers (46.2%) than it was for all other women (50.3%). However, for women with no children under age 18, the labor force participation rate was higher among Spanish language (49.9% versus 42.4% for non-Spanish language) women. In the aggregate, labor force participation was higher for Spanish language women, relative to the remainder of the population, between the ages of 16 and 24, but lower at all older ages.

4. Occupational and Industrial Composition. As the data in Table 46 indicate, there was a total of 14,841 persons of Spanish language employed as civilians in Virginia in 1970. The occupational and industrial composition of these workers is given in Table 47.

Over two-thirds of the Spanish language labor force was engaged in white collar occupations; much smaller shares were found in blue collar (18.0%) and service (13.6%) occupations, and very few (0.7%) were engaged in agriculture. These proportions were considerably different for the balance of the population--about half was white collar (49.4%), slightly more than one-third blue collar (36.0%, one eighth (12.0%) service, and the remaining 2.6% in agriculture. More than one-fourth of the Spanish language labor force was

TABLE 47. OCCUPATIONAL DISTRIBUTION AND INDUSTRIAL COMPOSITION OF THE EMPLOYED LABOR FORCE OF SPANISH LANGUAGE, VIRGINIA: 1970

Occupation	Persons	Percent
Total	14,481	100.0
Professional	4,079	27.5
Managerial	1,295	8.7
Sales	1,063	7.2
Clerical	3,603	24.3
White Collar	10,040	67.7
Craftsmen	1,228	8.3
Operatives	862	5.8
Transport Operatives	277	1.9
Nonfarm Laborers	307	2.1
Blue Collar	2,674	18.0
Farmers	70	0.5
Farm Laborers	37	0.3
Agricultural	107	0.7
Service	1,660	11.2
Private Households	360	2.4
Service	2,020	13.6

Industry	Persons	Percent
Total	14,841	100.0
Agriculture, Forestry, Fisheries	204	1.4
Mining	14	0.1
Construction	568	3.8
Durable Goods Manufacturing	809	5.5
Nondurable Goods Manufacturing	782	5.3
Transportation, Communications, and Utilities	650	4.4
Trade	2,831	19.1
Banking and Finance	1,101	7.4
Services	5,281	35.6
Public Administration	2,601	17.5

employed in a professional capacity, compared with 15.9% of non-Spanish language workers. While persons of Spanish language constituted 0.87% of the employed civilian labor force of the state, they constituted 3.0% of physicians, dentists, and other health practitioners, 1.3% of other health professionals, and 1.3% of all engineers.

The Spanish language labor force, was very heavily concentrated in services (35.6%), trade (19.1%), and public administration (17.5%). All together, these three sectors included nearly three-fourths of the labor force among Spanish language persons. For the balance of the population, services employed 25.3% of the labor force, trade 18.0%, and public administration 11.3%.

5. Income. Based on the relatively high level of education and the high number of professional workers among persons of Spanish language, a relatively high level of income was anticipated. The average income for families with a Spanish language head was $11,995 or 13.5% higher than the statewide average of $10,568. However, the level of income per family member was slightly lower in Spanish language families ($2,959) than in all families ($2,963). because of a larger average family size (4.1 members as opposed to 3.6 for the entire State).

The data in Table 48 show that only 15.0% of all Spanish language families had an income under $5,000. An additional 31.7% received an income between $5,000 and $9,999, 25.2% between $10,000 and $14,999, and the remaining 28.1% in excess of $15,000. This distribution compares quite favorably with that of the non-Spanish language population. Among the latter segment of the population, 22.1% received less than $5,000, 34.2% were between $5,000 and $9,999, 23.9% were between $10,000 and $14,999 and 19.7% earned in excess of $15,000.

The incidence of poverty was also less among Spanish-speaking families and unrelated individuals. Only 8.3% of families and 31.1% of unrelated individuals of Spanish language earned an income below the poverty criterion. For non-Spanish language families and individuals, these percentages were 12.3% and 36.9%, respectively. However, the mean income of poor Spanish language families ($1,960) was less than the mean income of all poor non-Spanish families ($2,050); the relative increase

TABLE 48. INCOME CHARACTERISTICS OF SPANISH LANGUAGE FAMILIES, VIRGINIA: 1970

	Number	Percent
All Families	10,655	100.0
With Income:		
Less Than $1,000	286	2.7
$1,000-$1,999	171	1.6
$2,000-$2,999	310	2.9
$3,000-$3,999	400	3.8
$4,000-$4,999	433	4.1
$5,000-$5,999	654	6.1
$6,000-$6,999	722	6.8
$7,000-$7,999	717	6.7
$8,000-$8,999	723	6.8
$9,000-$9,999	565	5.3
$10,000-$11,999	1,242	11.7
$12,000-$14,999	1,442	13.5
$15,000-$24,999	2,319	21.8
$25,000-$49,999	595	5.6
$50,000	76	0.7
Mean Income	$11,995	
Percent of Families With Income Below Poverty	8.3%	
Mean Income	$1,960	
Mean Income Deficit	$1,785	
Deficit Income Ratio	.91	
Percent of Individuals Below Poverty	31.1%	
Families With Female Head	733	
Mean Income	$5,304	
Percent Below Poverty	35.5%	

in income needed to move all these families to the poverty threshold was also somewhat greater in poor Spanish language families (91%) than in poor non-Spanish language families (75%).

As a final note, the female family headship rate among Spanish language families (6.9%) was considerably less than the rate for the balance of the population (11.2%). While the rate of poverty for female-headed families was lower among Spanish language families (35.5%) than among non-Spanish language families (37.0%), average family income for Spanish female-headed families ($5,304) was only 94% of the level for all other female-headed families ($5,644).

This concludes the summary of comparative socioeconomic characteristics of residential, racial, and ethnic groups in Virginia. The intention of this summary is to demonstrate the degree of variation between urban and rural Virginians, metropolitan and nonmetropolitan Virginians, and black and white Virginians. Several conclusions about the nature of this variation have been established. Where possible, plausible explanations have been offered. The following chapter summarizes some of the existing empirical relationships found by rigorous statistical analysis. For technically minded readers, the complete analysis is presented in the Appendix.

Chapter IX.

Summary of Analysis

The analytical material in the appendix is an effort to determine patterns of behavior of certain variables as they are associated with other variables.* The intention is to determine which factors seem to be most responsible for the variation in the socioeconomic indicators that have been discussed throughout this report.

As the appendix shows, one hypothesis formulated was that the level of per capita income was systematically related to a series of demographic (age composition, racial composition, mobility), social (level of education, fertility), and economic (labor force participation rates, unemployment, industrial composition) variables. However, this procedure (multiple regression analysis) does not permit adjustment for the fact that many of the explanatory variables are systematically related to each other (this is called multicollinearity).

To solve this problem, a technique called factor analysis was used. Essentially, factor analysis links a series of variables together to form one identity which is termed a factor. Each factor is unrelated to all other factors which evolve; hence, each serves as an essentially mutually independent "supervariable" which helps to establish an explanation for the differences in behavior of (in this case) groups of areas. It is important to realize that: "Factor analysis does not directly identify the factors. A factor is initially a blank entity. . . . . Identification of a factor is usually accomplished by considering only those variables that . . . have the highest numerical value in each factor. The analyst must then apply his knowledge of his discipline and his analytical skills in an effort to arrive at a meaning of each factor. . . ."**

The factor analysis in the appendix considers two subgroups of Virginia jurisdictions: (a)all cities and (b)all counties. For the county set, four significant factors were found: (1)socioeconomic status; (2)a young, relatively high fertility population; (3)labor force participation; and (4)a nonwhite factor. The city set, on the other hand, showed six significant factors: (1)socioeconomic status; (2)an aged population; (3)fertility; (4)female labor force participation; (5)agricultural employment; and (6)male labor force participation. These two sets of factors serve to differentiate the basic characteristics of cities and counties.

The final step was to combine factor analysis with multiple regression analysis. This was accomplished by removing, one by one, the dependent variables (those variables being analyzed) and creating new factors of the remaining variables for cities and for counties. The five dependent variables chosen for analysis were per capita income, median education of the population aged 25 years or more, rate of interstate migration, male labor force participation rates, and female labor force participation rates.

Per Capita Income. In the county subset, most of the behavior of income was explained by a factor representing socioeconomic status. The association was positive, indicating that variables such as educational level and occupational status have some effect on income. Additionally, there was a smaller positive association between this variable and a factor representing labor force participation. There was a negative association of similar magnitude between income and a factor representing a nonwhite, high fertility population. For the city subset, there was again a high, positive association between income and a socioeconomic status factor. A smaller positive association was found with a factor representing female income and a factor linking male labor force participation and the rate of unemployment.

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*"Behavior" of a variable means deviation from the mean value.

**Bernard M. Olsen and Gerald Garb, "A Factor Analysis of Characteristics of the South," in Essays in Southern Economic Development, edited by Melvin L. Greenhut and W. Tate Whitman, Chapel Hill: University of North Carolina Press, 1964, p. 295.

Median Years of School Completed. The analysis of this variable produced similar results to that of income. For counties, a high positive association was found between this variable and socioeconomic status; there was a smaller positive association linking the variable to labor force participation rates. For cities, almost all of the explanatory power (96%) was found in the socioeconomic status factor.

Rate of Interstate Migration. Among counties, socioeconomic status was again the predominate factor, although it was somewhat weaker for rate of interstate migration than for income and education. There was also a fairly strong inverse relationship between the rate of interstate migration and a factor which represents a stagnant economy. This factor was composed of high proportions of older persons, agricultural employment, and poor housing, coupled with low fertility and little or no population growth. For cities, socioeconomic status was much more important in an explanatory sense than was the county counterpart. Another positive association existed between migration rates and a variable suggesting less urbanized portions of cities. This may not be too surprising when it is remembered that the two "extended" cities in Virginia (Virginia Beach and Chesapeake) had relatively large amounts of inmigration in the intercensal period. Two other factors, female labor force participation rates and high fertility, showed a negative association with interstate migration.

Male and Female Labor Force Participation. The factors that evolved as explaining the behavior of these variables were rather disappointing in terms of their explanatory powers. For male rates in counties, positive associations were found with factors representing (a)a young, nonagricultural population, and (b)female labor force participation. In cities, the significant factors were: (a)high growth rate of population; (b) high fertility and high proportion of nonwhites; and (c)high proportion of nonagricultural workers.

For female rates of labor force participation, the county subset shows two factors with some significant explanatory power (both positive). These are the socioeconomic status factor and a factor combining high growth rates and high rates of male labor force participation. In the city subset, female labor force participation was found to increase with socioeconomic status, decrease with higher fertility and higher proportion nonwhite, and increase with percent of the population classified as urban.

Appendix.

Multivariate Analysis of Socioeconomic Characteristics of Virginia Cities and Counties

In the previous chapters variables of general economic, sociological, and demographic significance have been considered; analysis was limited to a straightforward presentation of data for each state planning district and to a summary by racial or residential characteristics.

This analysis is concerned with explaining variation in a number of variables (per capita income of persons, percent of the population who were interstate migrants between 1965-1970, median education of the population 25 years old and over, percent of males aged 16 years and over in the labor force, and percent of females aged 16 years and over in the labor force) in terms of other variables. This type of analysis is directed toward finding empirical associations between a dependent variable whose "behavior" it would be desirable to explain and other, independent, variables.

A total of twenty dependent and independent variables were chosen for analysis. A list of these variables is presented in Table 49. Before presenting the results of this analysis, the methodology employed is examined in some detail.

A. Methodology

Step-wise multiple regression has been used throughout this analysis. It facilitates predicting the behavior of one dependent variable based on the behavior of any number of independent variables. This is accomplished by estimating a multiple regression equation from an equation fitted to the data by a least-squares criterion.

The least-squares estimating equation is generated in the following form:

$$Y_p = a + b_1X_1 + b_2X_2 + \ldots + b_kX_k, \qquad (1)$$

where:

- Y_p = the dependent variable,
- a = a constant, indicating the point at which the regression line crosses the Y axis.
- b = a constant, often called a regression coefficient, indicating the amount of change produced in Y_p by a change in X, with all other X's held constant,
- X = an independent variable.

Often independent variables are expressed in different physical units, i.e., percent growth, median education, per capita income, etc. In order to facilitate comparisons between different independent variables, their units may be standardized by computing beta weights (B). These are related to the regression coefficients (b's) as follows:

$$B_{x_1} = \left[b_{x_1}\right]\left[\frac{SD_{x_1}}{SD_{Y_p}}\right], \qquad (2)$$

i.e., the beta coefficient for independent variable X_1 is equal to the regression coefficient of X_1 multiplied by the ratio of the standard deviation of X_1 to the standard deviation of the dependent variable, Y_p.

The beta coefficients also indicate the direction of the relationship between each independent variable and the dependent variable. Thus a negative beta weight indicates an inverse relationship (the higher the value of the independent variable, the lower the value of the dependent variable, and vice-versa), while a positive beta weight indicates a direct relationship between the two variables (the higher the value on one, the higher the value on the other, and conversely).

Using data for each county and independent city in Virginia (which increases the number of observations

to 138, rather than 22, as it would have been had state planning districts been used for the basic geographical unit) the following least-squares equation was generated using per capita income as the dependent variable:

INCOME = 5525.5 + 2.296 WHTCLR + 1.228 BLCLR + .680 AGRCLTRE -.243 MEDED -.161 URBAN.... (3)

In this equation we have substituted the appropriate variable names for each X, and each constant is a beta weight. The actual equation was, of course, much longer, since it consisted of 19 independent variables. Freely translated, this equation states that a direct relationship holds between INCOME and WHTCLR, BLCLR, and AGRCLTRE, while an inverse relationship exists between INCOME, MEDED and URBAN. This raises several difficulties, for one would normally expect a direct, rather than an inverse, relationship between INCOME and MEDED, as well as URBAN. A logical explanation for this result is that the independent variables WHTCLR, BLCLR, AGRCLTRE, MEDED, and URBAN are all highly interrelated. When WHTCLR is introduced into the regression equation it "explains" a considerable proportion of the variation in INCOME. BLCLR is then added to the equation, and it explains a certain proportion of the variation left in INCOME which was not previously explained by WHTCLR. By the time MEDED enters the equation, all of the variation it would normally explain has already been accounted for by the preceeding variables.

The difficulty thus stems from the fact that many of the independent variables are not truely "independent", but rather show a high degree of multicollinearity (that is, they are directly or inversely related to each other).

There are several possible solutions to this problem. One is simply to ignore the multicollinearity. The second is to drop all independent variables that are associated with one another, save for one, but this often results in throwing out conceptually important variables. The third alternative is to weight each variable in an effort to diminish, or minimize, the multicollinearity; this factor analysis technique, which is used in this study, provides a method for calculating weights to be used in loading variables, as well as reducing the number of independent variables to be analyzed.

One of the most common uses of factor analysis is for data reduction. This is accomplished by mathematical manipulation of the zero-order correlation coefficient matrix formed between all independent variables. The result of this manipulation is the output of a factor matrix (see Tables 50A and 50B). In the factor matrix, discrete factors are produced--four factors in Table 50A, six factors in

TABLE 49. VARIABLES EMPLOYED IN STATISTICAL ANALYSES

Variable	Description
INCOME	Per Capita Income of Persons Aged 14+
AGEDPOP	Percent of Population Aged 65+
NONWHITE	Percent of Population Nonwhite
NATIVE	Percent of Population Born in Virginia
MIGRANTS	Percent of Population Who Were Interstate Migrants Between 1965 & 1970
NOHGHSCH	Percent of Population Aged 25+ With 0-11 Years of School
COLGRADS	Percent of Population Aged 25+ With 16+ Years of School
WHTCLR	Percent of Labor Force in White Collar Occupations
BLCLR	Percent of Labor Force in Blue Collar Occupations
AGRCLTRE	Percent of Labor Force in Agricultural Occupations
URBAN	Percent of Population Living in an Urban Area
NOJOB	Percent of Male Civilian Labor Force Unemployed
NOPLUMB	Percent of all Housing Units Lacking Some Plumbing
NOTV	Percent of all Occupied Housing Units Without a Television
GROWTH	Percent Population Growth, 1960-1970
CUMFRTY	Cumulative Fertility Rate of Married Women Aged 35-44
AGSPFRTY	Age Specific Fertility Rate of Females Aged 25-34
MEDED	Median Education of Persons Aged 25+
MLFPR	Percent of Males Aged 16+ in Labor Force
FLFPR	Percent of Females Aged 16+ in Labor Force

TABLE 50A. FACTOR ANALYSIS, VIRGINIA COUNTIES

	Factor 1	Factor 2	Factor 3	Factor 4
INCOME	.74670	.18200	.27008	-.27115
AGEDPOP	-.19578	-.80171	-.24861	.02866
NONWHITE	-.12945	-.10617	.17396	.84594
NATIVE	-.76678	-.39077	-.16960	.13108
MIGRANTS	.64343	.55239	.25104	-.14960
NOHGHSCH	-.76754	-.21622	-.32934	.29285
COLGRADS	.88846	.22117	.16411	-.04148
WHTCLR	.88494	.32389	.16048	-.20322
BLCLR	-.95319	-.00847	-.15688	.01653
AGRCLTRE	-.20309	-.56278	-.10963	.32922
URBAN	.62499	.33582	.20858	-.25892
NOJOB	-.07312	-.22017	-.40017	-.07590
NOTV	-.33006	-.24777	-.21014	.35056
NOPLUMB	-.60937	-.42046	-.42593	.39797
GROWTH	.45527	.58937	.42348	-.15013
CUMFRTY	-.29487	.09635	-.22607	.70465
AGSPFRTY	.22646	.53524	.04732	.33347
MEDED	.74150	.29980	.40060	-.20462
MLFPR	.25125	.26411	.63260	-.12554
TLFPR	.28740	-.00575	.68585	-.04723

Table 50B and each variable is given a factor loading on each factor. The factors have the following characteristics:

(1) each factor is maximally independent from all other factors, and,

(2) each factor represents an underlying pattern in the data.

For the purposes of this analysis a minimum value of ±.4 was chosen for factor loadings. Any loading with an absolute value less than .4 was not considered to be statistically significant.

Table 50A indicates that eleven variables load significantly on Factor 1 six variables on Factor 2, six variables on Factor 3, and two variables on Factor 4.

Similarly, Table 50B indicates twelve variables with high loadings on Factor 1, five variables loading on Factor 2, three variables loading on Factor 3, two variables loading on Factor 4, one variable loading on Factor 5, and three variables loading on Factor 6.

Conceptualization of each factor, while based only on those variables with significant loadings on that factor, is complicated because in some instances a variable will load significantly on several factors. In these special cases several rules of thumb have been applied:*

(1) if a variable loads significantly and in the same direction (loadings are all positive or all negative) on two or more factors, then it is excluded. In Table 50A the variables MIGRANTS, NONPLUMB, GROWTH and MEDED are thus omitted from the conceptualization of the factors;

(2) if a variable loads significantly but in different directions on two factors, then the loading with the greater absolute value is retained, and the lesser loading excluded. In Table 50B the variable AGEDPOP is included in Factor 2 and excluded from Factor 1;

(3) if a variable loads significantly on three factors, with either two positive/one negative or two negative/one positive loadings, then the "odd" loading is retained, the other two dropped. In Table 50B the vari-

*R. J. Rummel, Applied Factor Analysis, Evanston: Northeastern University Press, 1970, p. 441

TABLE 50B. FACTOR ANALYSIS, VIRGINIA CITIES

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
INCOME	.74827	-.11921	.04340	.39965	-.22743	.21807
AGEDPOP	-.43430	.44894	-.27283	.05776	-.03374	-.37924
NONWHITE	-.41247	-.05450	.55725	.41614	.16815	-.31384
NATIVE	-.79229	.34095	-.25842	-.02453	-.03493	-.07844
MIGRANTS	.80606	-.06522	-.09417	-.11454	.36560	.20082
NOHGHSCH	-.84564	.34244	.11712	.14802	-.12914	.14093
COLGRADS	.87764	.27626	-.06532	.20585	.25792	-.02765
WHTCLR	.94595	-.07377	.03154	.08773	-.07541	.10801
BLCLR	-.94177	.07582	-.04495	-.09415	.04329	-.11426
AGRCLTRE	.09988	-.01413	.01204	-.04334	.81761	.01176
URBAN	.04944	.44472	-.12825	.22902	-.39772	-.14650
NOJOB	-.02449	.02717	-.03603	.01088	-.05001	-.53249
NOTV	-.23079	.56016	.03521	-.15652	.01295	.04339
NOPLUMB	-.52235	.36432	.08936	.15231	.22350	.00616
GROWTH	.41618	-.62885	-.13408	-.06519	.14047	.43422
CUMFRTY	-.20416	-.21404	.72831	-.18656	.05351	.19997
AGSPFRTY	.18994	.14202	.53324	-.10954	-.04517	.02920
MEDED	.83158	-.27050	-.17524	.01292	.02869	-.10964
MLFPR	-.03564	-.51419	.30226	.11632	-.39579	.53947
FLFPR	.15613	-.04037	-.25151	.92737	-.12595	.00262

able NONWHITE loads significantly on three factors, but only the loading on Factor 1 is retained.

In Table 50A we have reproduced the initial factor analysis (including all twenty variables) for the county subsample. After applying the preceding rules of thumb, Factor 1 is seen to include the following variables:

Positive Loadings	Negative Loadings
COLGRADS	BLCLR
INCOME	NATIVE
URBAN	NOHGHSCH
WHTCLR	

Factor 1 may be viewed as representing a general socioeconomic status (SES) dimension in the data, since it includes those variables most commonly used to measure SES--income, occupation, and education.

Factor 2 includes the following variables:

Positive Loadings	Negative Loadings
AGSPFRTY	AGEDPOP
	AGRCLTRE

Factor 2 delimits a young population with relatively high fertility and is limited to white and blue collar occupations.

FACTOR 3 includes:

Positive Loadings	Negative Loadings
FLFPR	NOJOB
MLFPR	

Factor 3 represents a dimension of labor force activity for both males and females.

Factor 4 includes:

Positive Loadings	Negative Loadings
CUMFRTY	
NONWHITE	

This factor represents a nonwhite aspect in the data, with an associated measure of high cumulative fertility for females aged 35-44.

The city subsample, shown in Table 50B, has six factors, two more than in the county subsample.

Factor 1 in the city subsample consists of the following variables:

Positive Loadings	Negative Loadings
COLGRADS	BLCLR
INCOME	NATIVE
MEDED	NOHGHSCH
MIGRANTS	NONWHITE
WHTCLR	NONPLUMB

Factor 1 is seen to be quite similar to its analogue in the county subsample; in each case a general measure of SES is tapped. City subsample Factor 1 is, however, more inclusive than its analogue. Most noticeable is the presence of variables NONWHITE and NOPLUMB with significant negative loadings.

Factor 2 in Table 50B consists of:

Positive Loadings	Negative Loadings
AGEDPOP	GROWTH
NOTV	
URBAN	

Factor 2 has no analogue in the county subsample, and taps an aged population living in urban areas which has grown little, or not at all, over the last decade. This factor is conceptualized as representing a stagnant urban population.

Factor 3 consists of:

Positive Loadings	Negative Loadings
AGESPFRTY	
CUMFRTY	

Factor 3 thus taps a dimension of high fertility in the data.

Factor 4 consists of:

Positive Loadings	Negative Loadings
FLFPR	

Factor 4 thus represents female labor force participation.

Factor 5 consists of:

Positive Loadings	Negative Loadings
AGRCLTRE	

Factor 5 extracts the agricultural occupation from the data.

Factor 6 consists of:

Positive Loadings	Negative Loadings
MLFPR	NOJOB

Factor 6 represents male labor force participation and is similar to Factor 4. Factors 4 and 6 in the city subsample closely represent Factor 2 in the county subsample. The difference seems to be that in urban areas male and female labor force participation are not dependent on one another, whereas in the counties they are. This, in turn, probably reflects the differeing proportions of nonmarried (single, divorced, separated) women living in metropolitan areas and the higher levels of female labor force participation found in urban areas.

In order to use the factors and factor loadings in a multiple regression analysis, each factor is converted into a new independent variable. These new variables will be more complex than the twenty variables since each will be a composit of several variables. The actual transformation of a factor to a new independent variable follows the general pattern:

$$\text{New Independent Variable} = [(\text{Loading of Variable } X_1)^2 (X_{i1}-\bar{X}_1)/SD_{x_1}]+$$
$$[(\text{Loading of Variable } X_2)^2 (X_{i2}-\bar{X}_2)/SD_{x_2}]+\ldots$$
$$[(\text{Loading of Variable } X_n)^2 (X_{in}-\bar{X}_n)/SD_{x_n}].$$

To create a new variable from Factor 6, Table 50B, we would calculate:

$$[(-.53249)^2 (NOJOB-\bar{X}_{NOJOB})SD_{NOJOB}]+$$
$$[(.53947)^2 (MLFPR-\bar{X}_{MLFPR})/SD_{MLFPR}].$$

B. Results

Tables 51-53 present the results of the analysis for each dependent variable.* Table 51 includes beta weights derived from the step-wise multiple regression analysis for each factor, as well as the multiple correlation coefficient (R^2). The multiple correlation coefficient can be interpreted as expressing the percent of variation explained by all the independent variables (factors) combined. Table 51 indicates the percent of R^2 accounted for by each beta coefficient. Table 53 offers a summary look at the

*The factors discussed in the analysis of independent variables are not identical to those discussed above. These new factors are created by removing the appropriate indeperdent variable from the set of all variables and repeating the factor analysis on this basis.

TABLE 51. BETA COEFFICIENTS FOR MULTIPLE REGRESSION ANALYSIS

Dependent Variable and Subsample	Beta Coefficients (B's)						Constant	R^2
	Factor 1*	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6		
INCOME-Counties	.733	.004	.127	-.136	----	----	2304.26	73.8%
INCOME-Cities	.710	.399	.044	.079	.122	-.254	2964.22	82.3%
MEDED-Counties	.713	.086	.186	-.046	----	----	9.61	78.0%
MEDED-Cities	.802	-.087	-.152	-.122	-.046	----	11.38	73.6%
MIGRANTS-Counties	.516	-.466	-.031	-.076	----	----	15.53	76.7%
MIGRANTS-Cities	.769	-.237	-.081	-.160	.243	-.032	25.66	76.1%
MLFPR-Counties	.170	.262	.381	-.031	----	----	73.34	39.6%
MLFPR-Cities	-.148	.139	-.542	.289	-.401	-.191	76.47	52.3%
FLFPR-Counties	.231	-.119	.424	-.028	----	----	38.04	29.2%
FLFPR-Cities	.277	----**	.085	-.192	-.211	-.078	43.97	16.3%

*Conceptualization of factors changes between each subsample and each dependent variable. See Table 53 for precise meaning of each factor.

**Factor 2 was not entered into the multiple regression equation because it failed to satisfy F-level and tolerance level minimum criteria.

TABLE 52. PERCENT OF MULTIPLE CORRELATION COEFFICIENT (R^2) EXPLAINED BY BETA COEFFICIENTS

Dependent Variable and Subsample	R^2	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Total, Factors 1-6
INCOME-Counties	73.8%	96.3%	0.1%	1.6%	2.0%	-----	-----	100%
INCOME-Cities	82.3%	68.4%	19.6%	0.2%	0.5%	1.6%	9.7%	100%
MEDED-Counties	78.0%	95.3%	0.6%	3.8%	0.3%	-----	-----	100%
MEDED-Cities	73.6%	95.9%	0.6%	2.0%	1.2%	0.3%	-----	100%
MIGRANTS-Counties	76.7%	82.9%	16.9%	0.1%	0.1%	-----	-----	100%
MIGRANTS-Cities	76.1%	82.0%	3.5%	0.7%	2.5%	11.2%	0.1%	100%
MLFPR-Counties	39.6%	5.5%	26.5%	67.8%	0.2%	-----	-----	100%
MLFPR-Cities	52.3%	2.8%	2.2%	41.1%	16.8%	29.9%	7.2%	100%
FLFPR-Counties	29.2%	10.3%	3.4%	86.1%	0.2%	-----	-----	100%
FLFPR-Cities	16.3%	42.2%	-----	2.1%	20.4%	34.3%	1.0%	100%

TABLE 53. FACTOR COMPOSITION

Dependent Variable	Subsample	Factor 1 + Loadings	Factor 1 - Loadings	Factor 2 + Loadings	Factor 2 - Loadings	Factor 3 + Loadings	Factor 3 - Loadings	Factor 4 + Loadings	Factor 4 - Loadings	Factor 5 + Loadings	Factor 5 - Loadings	Factor 6 + Loadings	Factor 6 - Loadings
INCOME	Counties	COLGRADS	BLCLR	AGSPFRTY	AGEDPOP	FLFPR	NOJOB	CUMFRTY	----	----	----	----	----
		URBAN	NATIVE	----	AGRCLTRE	MLFPR	----	NONWHITE	----	----	----	----	----
		WHTCLR	NOHGHSCH	----	----	----	----	----	----	----	----	----	----
INCOME	Cities	COLGRADS	BLCLR	FLFPR	----	NOTV	----	AGSPFRTY	----	AGRCLTRE	URBAN	NOJOB	MLFPR
		MEDED	NATIVE	----	----	----	----	CUMFRTY	----	----	----	----	----
		MIGRANTS	NOHGHSCH	----	----	----	----	----	----	----	----	----	----
		WHTCLR	NOPLUMB	----	----	----	----	----	----	----	----	----	----
MEDED	Counties	COLGRADS	BLCLR	AGSPFRTY	AGEDPOP	FLFPR	NOJOB	CUMFRTY	----	----	----	----	----
		INCOME	NOHGHSCH	----	AGRCLTRE	MLFPR	----	NONWHITE	----	----	----	----	----
		URBAN	----	----	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
MEDED	Cities	COLGRADS	BLCLR	FLFPR	----	NOTV	GROWTH	AGSPFRTY	----	AGRCLTRE	----	----	----
		INCOME	NOHGHSCH	----	----	URBAN	----	CUMFRTY	----	----	----	----	----
		MIGRANTS	NOPLUMB	----	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
MIGRANTS	Counties	COLGRADS	BLCLR	AGEDPOP	AGSPFRTY	FLFPR	NOJOB	CUMFRTY	----	----	----	----	----
		INCOME	NATIVE	AGRCLTRE	GROWTH	MLFPR	----	NONWHITE	----	----	----	----	----
		URBAN	NOHGHSCH	NOPLUMB	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
MIGRANTS	Cities	COLGRADS	BLCLR	FLFPR	----	NOTV	GROWTH	AGSPFRTY	----	AGRCLTRE	URBAN	NOJOB	----
		INCOME	NATIVE	----	----	----	----	CUMFRTY	----	----	----	----	----
		MEDED	NOHGHSCH	----	----	----	----	----	----	----	----	----	----
		WHTCLR	NOPLUMB	----	----	----	----	----	----	----	----	----	----
MLFPR	Counties	COLGRADS	BLCLR	AGSPFRTY	AGEDPOP	FLFPR	----	CUMFRTY	----	----	----	----	----
		INCOME	NOHGHSCH	----	AGRCLTRE	----	----	NONWHITE	----	----	----	----	----
		MEDED	----	----	----	----	----	----	----	----	----	----	----
		URBAN	----	----	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
MLFPR	Cities	COLGRADS	BLCLR	FLFPR	----	AGEDPOP	GROWTH	AGSPFRTY	----	AGRCLTRE	----	NOJOB	----
		INCOME	NATIVE	----	----	NOTV	----	CUMFRTY	----	----	----	----	----
		MEDED	NOHGHSCH	----	----	URBAN	----	NONWHITE	----	----	----	----	----
		MIGRANTS	NOPLUMB	----	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
FLFPR	Counties	COLGRADS	BLCLR	AGSPFRTY	AGEDPOP	GROWTH	NOJOB	CUMFRTY	----	----	----	----	----
		INCOME	NATIVE	----	AGRCLTRE	MLFPR	----	NONWHITE	----	----	----	----	----
		MEDED	NOHGHSCH	----	----	----	----	NOPLUMB	----	----	----	----	----
		URBAN	----	----	----	----	----	----	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----
FLFPR	Cities	COLGRADS	BLCLR	----	----	AGEDPOP	----	AGSPFRTY	----	AGRCLTRE	URBAN	NOJOB	GROWTH
		INCOME	NATIVE	----	----	NOPLUMB	----	CUMFRTY	----	----	----	----	MLFPR
		MEDED	NOHGHSCH	----	----	NOTV	----	NONWHITE	----	----	----	----	----
		WHTCLR	----	----	----	----	----	----	----	----	----	----	----

composition of each factor and should be used in conjunction with Tables 51 and 52.

1. Per Capita Income (INCOME). In the county subsample factors 1, 2, and 3 are directly related to INCOME; Factor 4 is inversely related. Factor 1 representing the SES dimension, is clearly dominant among the factors, with a beta weight of .733. This factor alone accounts for 96% of the explained variation in INCOME and 71% of the total variation in INCOME.

Factor 2 represents a young population characterized by high age-specific fertility and employment in white and blue collar occupations. This factor has a very small beta coefficient, .004, and explains very little of the variation in INCOME.

Factor 3 represents labor force participation and is directly related to INCOME. Its beta coefficient is small, .127, and it accounts for only about 1.5% of the explained variation in INCOME.

Factor 4 is inversely related to INCOME, and represents two linked variables, NONWHITE and CUMFRTY. This factor and Factor 3 are approximately equal in both the size of the beta weight and their contribution to R^2.

In the city subsample five factors are directly related to INCOME, while Factor 6 is inversely related. Factors 3, 4, and 5 are ignored, due to their small beta weights.

Factor 1 again represents the SES dimension, and has a high positive beta weight of .710. This factor accounts for 68% of the explained variation in INCOME, and 56% of the total variation in INCOME.

Factor 2 is composed of only one variable, FLFPR, and is directly related to INCOME. Its beta coefficient is moderately high, .399, and accounts for approximately 20% of the explained variation in INCOME, and 16% of the total variation in INCOME.

Factor 6 is composed of two related variables, male labor force participation (MLFPR) and male unemployment (NOJOB). Since NOJOB has a positive loading and MLFPR a negative loading, Factor 6 is inversely related to INCOME. This factor accounts for about 10% of the explained variation in INCOME, and 8% of the total variation.

In both subsamples R^2 is reasonably high (.738 for counties and .823 for cities), indicating that the factors have explained a majority of the variation in per capita income. In both subsamples Factor 1, representing SES, is dominant, although it is more dominant for the county subsample. Factor 1 discloses that the variables COLGRADS, MEDED, MIGRANTS, URBAN, and WHTCLR measure the positive aspect of SES, and that BLCLR, NATIVE, NOHGHSCH, and NOPLUMB measure the negative aspect. Equation (3) reveals that using factors, rather than individual variables, results in an analysis which avoids the complications caused by high multicollinearity between independent variables.

2. Median Education (MEDED). Analysis of the dependent variable MEDED is quite similar to that of INCOME. For the county subsample, three factors are directly related to MEDED; one factor is inversely related. Factors 2 and 4 are ignored, due to the small beta coefficients.

Factor 1 again represents SES and is directly related to MEDED and has a sizeable beta coefficient of .713 which accounts for 95% of the explained variation in MEDED and 74% of the total variation in MEDED.

Factor 3 consists of three variables, MLFPR, FLFPR, and NOJOB. Both MLFPR and FLFPR have positive factor loadings NOJOB has a negative factor loading, and the factor is directly related to MEDED. The beta coefficient for Factor 3 (.186) is small and accounts for only 4% of the total R^2.

In the city subsample Factor 1 again predominates, being directly related to MEDED and having a beta coefficient of .802. Factor 1 accounts for 96% of the explained variation in MEDED, and 71% of the total variation. Factors 2 through 5 are relatively unimportant and together account for only 4% of R^2.

The only point of contrast between the two subsamples is the relatively higher beta coefficient of Factor 3 in the county subsample, as compared to the beta coefficient for Factor 2 in the city subsample. We conclude that whereas education does influence labor force participation rates in Virginia counties, in Virginia cities education has no association with female labor force participation rates. This latter situation could develop because in the cities most jobs filled by women do not demand a high level of education and

are thus filled by women with a wide range of educational backgrounds.

In both subsamples R^2 is reasonably high, .780 for counties and .736 for cities. As with INCOME, Factor 1, representing SES, accounts for almost all of the explained variation in MEDED.

3. Interstate Migrants (MIGRANTS). The dependent variable MIGRANTS refers to interstate migration by the population aged five years and over. In the county subsample Factors 1 and 2 have moderately large beta coefficients; Factors 3 and 4 have small beta coefficients and may be ignored.

Factor 1, representing SES, has a beta coefficient of .516. While this is a fairly large coefficient, it is much less than Factor 1 beta coefficients for INCOME and MEDED. This is accounted for by the presence of Factor 2 with a beta coefficient of -.466. In combination these two factors account for 99.8% of the explained variation in MIGRANTS.

Further analysis of Factor 2 indicates that this factor is picking up a group of counties which might best be described as "stagnant." These counties are characterized as having a large proportion of their population aged 65 and over, high proportions of the labor force in agricultural occupations, a high incidence of substandard housing, low age-specific fertility and a low, or negative, rate of population growth. Not unexpectedly, Factor 2 is inversely related to MIGRANTS.

It is interesting to note that the beta coefficients for Factor 1 and Factor 2 are of approximately equal size. This indicates that for the prospective interstate migrant to a Virginia county, the choice of residence location depends on two independent considerations. First, the population in the county must be characterized by high SES traits, and second, the area must not be stagnant. Even a relatively prosperous county would be unattractive to interstate migrants unless it was also experiencing moderate to high population growth.

In the city subsample Factors 3 and 6 have low beta coefficients and are ignored. Factor 1, representing SES, has a large beta coefficient of .769 and is directly related to MIGRANTS. Factor 1 accounts for 82% of the explained variation in MIGRANTS, and 62% of the total variation.

Factor 2 is composed of the single variable FLFPR, has a positive factor loading, and is inversely related to MIGRANTS. One possible explanation for this finding is that areas with large military populations tend to have relatively low rates of labor force participation. Possibly, the spouses of military personnel are less likely to seek employment than are other women. At the same time, the presence of significant numbers of military almost insure high rates of migration.

Factor 4 taps a high fertility dimension in the data, and it also has a negative beta coefficient. A possible explanation is that those areas characterized by both high age-specific and cumulative fertility are simultaneously areas whose populatic.. would score low on the SES factor.

Factor 5 is somewhat unusual. This factor consists of two variables, URBAN and AGRCLTRE. URBAN has a negative factor loading; AGRCLTRE a positive loading. Factor 5 is, however, directly related to MIGRANTS. A possible explanation is that Factor 5 is locating rural areas within Virginia cities, a seeming contradiction until it is remembered that several cities in Virginia were once counties and still contain predominantly rural areas within their boundaries. It thus appears that, holding SES level constant, interstate migrants prefer the less urbanized areas of Virginia cities.

4. Male Labor Force Participation Rates (MLFPR). The dependent variables MLFPR and FLFPR have consistently low R^2's. This indicates that those independent variables necessary for an adequate explanation of labor force participation rates were not included among the twenty variables selected for analysis. Possibly, a detailed age breakdown cross-tabulated by marital status and presence of children of specific ages would improve the multiple regression estimates, but we have not attempted to add this detail.

In the county subsample Factors 2 and 3 have moderately high beta coefficients, and both factors are directly related to MLFPR.

Factor 2 represents a young population with high age-specific

fertility and employment in nonagricultural occupations. The beta coefficient for Factor 2 is .262 and accounts for 27% of the explained variation in MLFPR, but only 10% of the total variation in MLFPR.

Factor 3 is composed of the single variable FLFPR, is directly associated with MLFPR, and has a beta coefficient of .381. This coefficient accounts for 68% of the explained variation in MLFPR and 27% of the total variation.

In the city subsample Factors 3, 4, and 5 have moderately large beta coefficients. These factors indicate that high rates of male labor force participation are associated with: (a) a high growth rate, (b) high fertility rates and high proportions nonwhite, and (c) high proportions of workers in nonagricultural occupations.

5. Female Labor Force Participation Rates (FLFPR). In the county subsample only Factors 1 and 3 have moderately large beta coefficients (.231 and .424, respectively). High rates of female labor force participation are thus directly related to high SES (Factor 1), high growth rates and high rates of male labor force activity, and low male unemployment (Factor 3). These two factors, however, account for only 3% and 25% of the total variation in FLFPR.

In the city subsample Factors 1, 4, and 5 are moderately large, indicating that FLFPR increases with: increases in SES (Factor 1), decreases in fertility and percentage nonwhite (Factor 4), and increases in the percent of urban population, plus decreases in the agricultural-related occupations (Factor 5).

Figure 25. Planning Districts of Virginia*

1 **Lenowisco** (City: Norton / Counties: Lee, Scott, Wise)

2 **Cumberland Plateau** (Counties: Buchanan, Dickenson, Russell, Tazewell)

3 **Mount Rogers** (Cities: Bristol, Galax / Counties: Bland, Carroll, Grayson, Smyth, Washington, Wythe)

4 **New River Valley** (City: Radford / Counties: Floyd, Giles, Montgomery, Pulaski)

5 **Fifth** (Cities: Clifton Forge, Covington, Roanoke, Salem / Counties: Alleghany, Botetourt, Craig, Roanoke)

6 **Central Shenandoah** (Cities: Buena Vista, Harrisonburg, Lexington, Staunton, Waynesboro / Counties: Augusta, Bath, Highland, Rockbridge, Rockingham)

7 **Lord Fairfax** (City: Winchester / Counties: Clarke, Frederick, Page, Shenandoah, Warren)

8 **Northern Virginia** (Cities: Alexandria, Fairfax, Falls Church / Counties: Arlington, Fairfax, Loudoun, Prince William)

9 **Rappahannock - Rapidan** (Counties: Culpeper, Fauquier, Madison, Orange, Rappahannock)

10 **Thomas Jefferson** (City: Charlottesville / Counties: Albemarle, Fluvanna, Greene, Louisa, Nelson)

11 **Central Virginia** (Cities: Bedford, Lynchburg / Counties: Amherst, Appomattox, Bedford, Campbell)

12 **West Piedmont** (Cities: Danville, Martinsville / Counties: Franklin, Henry, Patrick, Pittsylvania)

13 **Southside** (City: South Boston / Counties: Brunswich, Halifax, Mecklenburg)

14 **Piedmont** (Counties: Amelia, Buckingham, Charlotte, Cumberland, Lunenburg, Nottoway, Prince Edward)

15 **Richmond Regional** (City: Richmond / Counties: Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, Powhatan)

16 **RADCO** (City: Fredericksburg / Counties: Caroline, King George, Spotsylvania, Stafford)

17 **Northern Neck** (Counties: Lancaster, Northumberland, Richmond, Westmoreland)

18 **Middle Peninsula** (Counties: Essex, Gloucester, King and Queen, King William, Middlesex)

19 **Crater** (Cities: Colonial Heights, Emporia, Hopewell, Petersburg / Counties: Dinwiddie, Greensville, Prince George, Surry, Sussex)

20 **Southeastern Virginia*** (Cities: Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk, Virginia Beach / Counties: Isle of Wight, Nansemond, Southampton)

21 **Peninsula** (Cities: Hampton, Newport News, Williamsburg / Counties: James City, York)

22 **Accomack - Northampton** (Counties: Accomack, Northampton)

* Nansemond County became a city on July 1, 1972, then merged with the City of Suffolk on January 1, 1974. This map shows Virginia's Planning Districts before the formation of this new City of Suffolk.